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In The

Supreme Court of the United States

October Term, 1985

STATE OF KANSAS,

Plaintiff,

v.

STATE OF COLORADO,

Defendant,

UNITED STATES OF AMERICA,

Defendant-Intervenor.

COLORADO'S EXCEPTIONS TO THE REPORT OF THE SPECIAL MASTER AND BRIEF IN SUPPORT THEREOF

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UNITED STATES OF AMERICA,

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EXCEPTIONS TO THE REPORT OF THE SPECIAL MASTER

The State of Colorado respectfully excepts to the Report of Special Master Arthur L. Littleworth dated July, 1994, as follows:

1. Colorado excepts to the Master's findings that Kansas was not guilty of inexcusable delay in making its well claim and that Colorado was not prejudiced by Kansas' failure to press its claim earlier.

2. Colorado excepts to the Master's ruling that, under Article IV-D of the Arkansas River Compact, pre-compact wells in Colorado are limited to pumping the highest amount pumped in the years during which the Compact was

negotiated and the Master's finding that the highest amount of such pumping was 15,000 acre-feet per year.

3. Colorado excepts to the Master's ruling that increases in usable Stateline flows resulting from the Operating Plan for John Martin Reservoir adopted by the Arkansas River Compact Administration in 1980 were "separately bargained for" and, therefore, should not offset depletions caused by post-compact well pumping in Colorado.

4. Colorado excepts to the Master's ruling that Kansas need only meet the "preponderance of the evidence" test applicable to ordinary civil litigation to prove a breach of Article IV-D of the Arkansas River Compact.

Respectfully submitted,

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STATE OF COLORADO,

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UNITED STATES OF AMERICA,

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BRIEF IN SUPPORT OF COLORADO'S EXCEPTIONS

QUESTIONS PRESENTED

1. Whether the defense of laches is applicable against a state in a controversy between states in this Court.

2. Whether Kansas inexcusably delayed in bringing a claim for damages against Colorado for breach of the Arkansas River Compact from post-compact well pumping in Colorado and whether Colorado was prejudiced by Kansas' delay.

3. Whether Article IV-D of the Arkansas River Compact limits pre-compact wells in Colorado to pumping the highest amount pumped during the years when the Compact was negotiated; and, if so, whether the Special Master was correct in determining that the highest amount pumped during those years was 15,000 acre-feet per year.

4. Whether increases in usable Stateline flows resulting from the Operating Plan for John Martin Reservoir adopted by the Arkansas River Compact Administration in 1980 should offset depletions caused by post-compact well pumping in Colorado.

5. Whether the preponderance of the evidence standard applies in a controversy between states involving an alleged breach of an interstate compact.

TABLE OF CONTENTS

Page

TABLE OF AUTHORITIES v

REPORT OF THE SPECIAL MASTER 1

JURISDICTION 1

ARKANSAS RIVER COMPACT 1

STATEMENT OF THE CASE 2

A. DESCRIPTION OF THE ARKANSAS RIVER BASIN 3

B. HISTORY OF IRRIGATION AND WELL DEVELOPMENT IN THE ARKANSAS RIVER BASIN .. 6

Colorado 6

Kansas 9

C. COLORADO V. KANSAS 13

D. THE ARKANSAS RIVER COMPACT 14

E. THE CURRENT DISPUTE 17

SUMMARY OF ARGUMENT 23

ARGUMENT 24

I. KANSAS' CLAIM FOR DAMAGES SHOULD BE BARRED BY LACHES 24

A. LACHES CAN BE APPLIED AGAINST A STATE IN A CONTROVERSY BETWEEN STATES 26

B. KANSAS WAS GUILTY OF LACHES IN MAKING ITS WELL CLAIM 32

1. Kansas Knew or Should Have Known of the Facts Giving Rise to Its Claim by 1956 36

TABLE OF CONTENTS – Continued

Page

2. Kansas Has No Valid Excuse for its Lengthy Delay 48

3. Colorado Was Prejudiced by Kansas' Unexcused Delay 53

a. Evidentiary Prejudice 55

b. Economic Prejudice 62

4. Laches Should Bar a Claim for Damages until Kansas Made a Request for an Investigation in 1985 63

II. ARTICLE IV-D OF THE ARKANSAS RIVER COMPACT DOES NOT LIMIT PRE-COMPACT WELLS IN COLORADO TO PUMPING 15,000 ACRE-FEET PER YEAR AFTER THE COMPACT BECAME EFFECTIVE 64

A. PRE-COMPACT WELLS ARE NOT LIMITED TO PUMPING THE HIGHEST AMOUNT PUMPED IN THE YEARS DURING WHICH THE COMPACT WAS NEGOTIATED 66

B. THE USGS ESTIMATES FOR THE 1940S ARE NOT SUPPORTED BY POWER DATA AND THE MASTER'S REASONS FOR ACCEPTING THOSE ESTIMATES ARE NOT REASONABLE 73

1. Experts Relied on the 1970 USGS Report 75

2. Major's Defense of the USGS Estimates .. 75

3. *Fellhauer* 77

TABLE OF CONTENTS – Continued

Page

4. 1975 Report 77

5. Book's Testimony 78

6. Basis for the Colorado Estimates 80

7. Virtually Nothing Is Known about the Power Figures, but the Pumpage Estimates Have Been Accepted 81

8. Lack of Discussion of Pumping During the Compact Negotiations 82

9. Concerns With Colorado's Estimates ... 84

IV. INCREASES IN STATELINE FLOWS RESULTING FROM THE 1980 OPERATING PLAN WERE NOT "SEPARATELY BARGAINED FOR" AND SHOULD OFFSET DEPLETIONS TO USABLE STATELINE FLOWS 85

V. KANSAS SHOULD BE REQUIRED TO PROVE A BREACH OF THE COMPACT BY CLEAR AND CONVINCING EVIDENCE 91

CONCLUSION 100

TABLE OF AUTHORITIES

Page

CASES

FEDERAL

A.C. Aukerman Co. v. R.L. Chaides Const. Co., 960 F.2d 1020 (Fed.Cir. 1992) ..... *passim*

A.C. Aukerman v. Miller Formless Co., 693 F.2d 697 (7th Cir. 1982) 63

Addington v. Texas, 441 U.S. 418 (1979) 93

Advanced Hydraulics, Inc. v. Otis Elevator Co., 525 F.2d 477 (7th Cir.), *cert. denied*, 423 U.S. 869 (1975) 34

Alabama v. Arizona, 291 U.S. 286 (1934) 92

Benedict v. New York, 250 U.S. 321 (1919) 36, 44

Block v. North Dakota, 461 U.S. 273 (1983) 24, 27

Brown v. County of Buena Vista, 95 U.S. 157 (1877) ..26, 53

City of New Albany v. Burke, 78 U.S. (11 Wall.) 96 (1871) 36, 44

Colorado v. Kansas, 320 U.S. 383 (1943) ..... *passim*

Colorado v. New Mexico, 459 U.S. 176 (1982) 70, 98

Colorado v. New Mexico, 467 U.S. 310 (1984) 33, 93

Connecticut v. Massachusetts, 282 U.S. 660 (1931) 99

Continental Coatings Corp. v. Metco, Inc., 464 F.2d 1375 (7th Cir. 1972) 62

Costello v. United States, 365 U.S. 265 (1961) 34

Gardner v. Panama R.R. Co., 342 U.S. 29 (1951) 34

Georgia v. Pennsylvania R. Co., 324 U.S. 439 (1945) 29

TABLE OF AUTHORITIES – Continued

Page

Gillons v. Shell Co. of Cal., 86 F.2d 600 (9th Cir. 1936), *cert. denied*, 302 U.S. 689 (1937) 27

Goodman v. McDonnell Douglas Corp., 606 F.2d 800 (8th Cir. 1979), *cert. denied*, 446 U.S. 913 (1980) 35, 53, 54

Guaranty Trust Co. v. United States, 304 U.S. 126 (1938) 25, 27

Gull Airborne Instruments, Inc. v. Weinberger, 694 F.2d 838 (D.C. Cir. 1982) 52, 54

Herman & MacLean v. Huddleston, 459 U.S. 375 (1983) 93, 94

Hinderlider v. La Plata River & Cherry Creek Ditch Co., 304 U.S. 92 (1938) 97

Holmberg v. Armbrecht, 327 U.S. 392 (1946) 34, 35

Illinois v. Kentucky, 500 U.S. 380 (1991) 25, 31

In re Winship, 397 U.S. 358 (1970) 93

Independent Bankers Assn. of America v. Heiman, 627 F.2d 486 (D.C.Cir. 1980) 35

Indiana v. Kentucky, 136 U.S. 479 (1890) 24, 54

Jensen v. Western Irrigation & Mfg., Inc., 650 F.2d 165 (9th Cir. 1980) 36

Kansas v. Colorado, 185 U.S. 125 (1902) 29

Kansas v. Colorado, 206 U.S. 46 (1907) 3, 9, 29

Massachusetts v. Missouri, 308 U.S. 1 (1939) 34, 97

Missouri v. Illinois, 200 U.S. 496 (1906) ... 25, 30, 92, 95

Naxon Telesign Corp. v. Bunker Ramo Corp., 517 F.Supp. 804 (N.D.Ill. 1981), *aff'd, in part*, 686 F.2d 1258 (1982) 45

TABLE OF AUTHORITIES – Continued

Page

Nebraska v. Wyoming, 507 U.S. ___, 113 S.Ct. 1689, 123 L.Ed.2d 317 (1993) 30, 92

North Dakota v. Minnesota, 263 U.S. 365 (1923) .. 29, 92, 94

Ohio v. Kentucky, 410 U.S. 641 (1973) 25, 34

Pearson v. Central Ill. Light Co., 210 F.2d 352 (7th Cir. 1954) 45

Penn Mutual Life Ins. Co. v. City of Austin, 168 U.S. 685 (1898) 27

Potash Co. of America v. International Minerals & Chemical Corp. 213 F.2d 153 (10th Cir. 1954) 36, 44, 45, 49

Principality of Monaco v. Mississippi, 292 U.S. 313 (1934) 29

Rhode Island v. Massachusetts, 37 U.S. (12 Pet.) 657 (1838) 28, 29, 31

Rhode Island v. Massachusetts, 45 U.S. (4 How.) 591 (1846) 54

Russell v. Todd, 309 U.S. 280 (1940) 34

Southern Pac. Co. v. Bogert, 250 U.S. 483 (1919) 34

Spallone v. United States, 493 U.S. 265 (1993) 96

Stone v. Williams, 873 F.2d 620 (2d Cir. 1989), *cert. denied*, 493 U.S. 959 (1989) 34, 53

Studiengesellschaft Kohle v. Eastman Kodak Co., 616 F.2d 1315 (5th Cir. 1980), *cert. denied*, 449 U.S. 1014 (1980) 34, 36, 44, 50, 53

Texas v. Florida, 306 U.S. 398 (1939) 34

TABLE OF AUTHORITIES – Continued

Page

Texas v. New Mexico, 462 U.S. 554 (1983) 15, 51

Texas v. New Mexico, 482 U.S. 124 (1987) 28, 31, 51, 90

Texas v. New Mexico, No. 65, Original (Oct. Term 1975) 51

United States v. Hoar, 26 F.Cas. 329 (C.C.D.Mass. 1821) 27

United States v. Texas, 339 U.S. 707 (1950) 95

Univ. of Pittsburgh v. Champion Prod., Inc., 686 F.2d 1040 (3d.Cir.), *cert. denied*, 459 U.S. 1087 (1982) 63

Vermont v. New York, 417 U.S. 270 (1974) 34

Virginia v. West Virginia, 206 U.S. 290 (1907).....30, 95

Virginia v. West Virginia, 234 U.S. 117 (1914).....95, 96

Virginia v. West Virginia, 246 U.S. 565 (1918)..... 96

Washington v. Oregon, 297 U.S. 517 (1936) 14, 25, 30, 92, 94

Weber v. Board of State Harbor Commissioners, 85 U.S. 57 (1873) 30

White v. Daniel, 909 F.2d 99 (4th Cir. 1990), *cert. denied*, 501 U.S. 1260 (1991).....36, 42, 53

Young v. The Key City, 81 U.S. (14 Wall.) 653 (1872) 35

COLORADO

Black v. Taylor, 128 Colo. 449, 264 P.2d 502 (1953) 70

City of Colorado Springs v. Bender, 148 Colo. 458, 366 P.2d 552 (1961) 70

Fellhauer v. People, 167 Colo. 320, 447 P.2d 986 (1968) 77

TABLE OF AUTHORITIES – Continued

Page

STATUTES

FEDERAL

Act of Aug. 16, 1962, Pub.L. No. 87-590, 76 Stat. 389 (1962) 7

Arkansas River Compact, Act of May 31, 1949, 63 Stat. 145 (1949) 1, 2, 5

Fed.R.Evid. 702 77

Fed.R.Evid. 703 77

Reclamation Development Act of 1974, Pub.L. No. 93-493, Title XI, § 1101, 88 Stat. 1497-98 7

United States Constitution, 28 U.S.C. § 1251(a)(1) 1

United States Constitution, Article III, Section 2, Clause 2 1

COLORADO

Colo.Rev.Stat. § 37-60-101, *et seq.* 38

OTHER

2 McCormick on Evidence § 340 (3rd ed. J. Strong, ed. 1992) 96

Arkansas River Compact: Hearing on H.R. 4151 Before the Subcomm. on Irrigation and Reclamation of the House Comm. on Public Lands, 81st Cong., 1st Sess. (1949) 2, 9

Arkansas River Compact: Hearing on S. 1448 Before the Senate Comm. on Interior and Insular Affairs, 81st Cong., 1st Sess. (1949) 2

TABLE OF AUTHORITIES – Continued

Page

H. Kramer, *Report to the Congress of the United States on the Proposed Arkansas River Compact Between Colorado and Kansas* (1949) 5

I. Brownlie, *Principles of Public International Law* (4th ed. 1990) 26, 31

J. Breitenstein, *The Law of the Arkansas River*..... 15

1 *Oppenheim's International Law* (Lauterpacht ed., 8th ed. 1955) 26

Restatement (Second) of Contracts (1981)..... 68, 90, 91

Restatement (Third) of the Foreign Relations Law of the United States (1987) 68

The Federalist, No. 80 (J. Cooke ed. 1961)..... 29

C. Warren, *The Supreme Court and Sovereign States* (1924) 29

TABLE OF EXHIBITS

Page(s)

COLORADO EXHIBITS

Colo. Exh. 2 (Admitted 5/20/91, RT Vol. 80 at 4-5) 60

Colo. Exh. 17 (Admitted by Order of 12/16/91) 42, 88, 89

Colo. Exh. 21 (Admitted by Order of 12/16/91) 39, 40, 41, 88

Colo. Exh. 57 (Admitted 10/15/90, RT Vol. 12 at 37) 15, 83

Colo. Exh. 88.b. (Admitted 4/29/91, RT Vol. 71 at 23[1]) 80

Colo. Exh. 95 (Admitted 5/22/92, RT Vol. 115 at 97) 37, 38

Colo. Exh. 112 (Admitted 5/22/92, RT Vol. 115 at 97) 6

Colo. Exh. 114 (Admitted 5/20/91, RT Vol. 80 at 90) 79

Colo. Exh. 115 (Admitted 9/22/92, RT Vol. 126 at 72) 78

Colo. Exh. 165* (Admitted 4/29/91, RT Vol. 71 at 23) 8, 55, 73, 78, 79, 80

Colo. Exh. 300 (Admitted 12/20/90, RT Vol. 38 at 57-60) 86

Colo. Exh. 623 (Admitted 10/09/90, RT Vol. 10 at 48) 83

---

[1] Record corrected by Order to Correct Record Re Defendant's Exhibits, Report-App. 119, ¶1 (Jan. 5, 1994).

TABLE OF EXHIBITS – Continued

Page(s)

Colo. Exh. 650 (Admitted 10/09/90, RT Vol. 10 at 143) 15

Colo. Exh. 660 (Admitted 10/30/90, RT Vol. 23 at 137) 55, 58

Colo. Exh. 835 (Admitted 5/26/92, RT Vol. 116 at 90) 60

Colo. Exh. 836 (Admitted 5/26/92, RT Vol. 116 at 90) 4, 60

Colo. Exh. 851 (Admitted 5/26/92, RT Vol. 116 at 91) 8

Colo. Exh. 852 (Admitted 5/26/92, RT Vol. 116 at 91) 9

Colo. Exh. 975 (Admitted 5/19/92, RT Vol. 112 at 79) 21, 87

JOINT EXHIBITS

Jt. Exh. 1 (Admitted 9/28/90, RT Vol. 9 at 76) 1

Jt. Exh. 2 (Admitted 9/28/90, RT Vol. 9 at 76) 2

Jt. Exh. 3 (Admitted 9/24/90, RT Vol. 5 at 86) 99

Jt. Exh. 4 (Admitted 9/24/90, RT Vol. 5 at 86) 67

Jt. Exh. 5 (Admitted 10/18/90, RT Vol. 15 at 12) 4, 6, 69, 71

Jt. Exh. 15 (Admitted 9/28/90, RT Vol. 9 at 83-84) 2, 68, 84

Jt. Exh. 16 (Admitted 9/28/90, RT Vol. 9 at 83-84) 2, 5, 68, 69

Jt. Exh. 18 (Admitted 10/26/90, RT Vol. 21 at 36) .. 46, 61

TABLE OF EXHIBITS – Continued

Page(s)

Jt. Exh. 19 (Admitted 10/22/90, Rt Vol. 17 at 89) 16, 42, 44

Jt. Exh. 29 (Admitted 10/17/90, Rt Vol. 14 at 26) 4

Jt. Exh. 61 (Admitted 10/31/90, Rt Vol. 24 at 143) ..39, 45

Jt. Exh. 66 (Admitted 10/18/90, Rt Vol. 15 at 30) 56, 58, 74

Jt. Exh. 67 (Admitted 10/27/92, Rt Vol. 131 at 85) 45

Jt. Exh. 68 (Admitted 10/27/92, Rt Vol. 131 at 85) 45

Jt. Exh. 69 (Admitted 5/03/91, Rt Vol. 75 at 5)..... 45

Jt. Exh. 86 (Admitted 12/19/90, Rt Vol. 37 at 138) 12

Jt. Exh. 88 (Admitted 10/16/90, Rt Vol. 13 at 121, 127) 33, 52

Jt. Exh. 91 (Admitted 10/18/90, Rt Vol. 15 at 130) 74

Jt. Exh. 92 (Admitted 10/18/90, Rt Vol. 15 at 52) 5

Jt. Exh. 94 (Admitted 10/19/90, Rt Vol. 16 at 34) 74, 78, 81

Jt. Exh. 105 (Admitted 5/26/92, Rt Vol. 116 at 80) ..*passim*

Jt. Exh. 108 (Admitted 4/17/91, Rt Vol. 64 at 6, 140) 74

Jt. Exh. 136 (Admitted 11/16/90, Rt Vol. 30 at 75-76) 39, 45

Jt. Exh. 137 (Admitted 11/16/90, Rt Vol. 30 at 75-76) 39, 45

Jt. Exh. 138 (Admitted 11/16/90, Rt Vol. 30 at 75-76) 12

TABLE OF EXHIBITS - Continued

Page(s)

Jt. Exh. 139 (Admitted 11/16/90, RT Vol. 30 at 75-76) 11, 12

Jt. Exh. 140 (Admitted 11/16/90, RT Vol. 30 at 75-76) 4, 11, 12

Jt. Exh. 168 (Admitted 5/28/91, RT Vol. 85 at 147, 151) 7

Jt. Exh. 169 (Admitted 5/28/91, RT Vol. 147, 151) 7

KANSAS EXHIBITS

Kan. Exh. 111* (12/6/90) (Admitted 1/23/91, RT Vol. 45 at 84, 88) 20

Kan. Exh. 111*** (Admitted 3/17/92, RT Vol. 99 at 5) 20

Kan. Exh. 129 (Admitted by Order of 11/16/93) 66, 67

Kan. Exh. 205A (Admitted 9/21/90, RT Vol. 4 at 30) 45, 83

Kan. Exh. 447 (Admitted 12/18/90, RT Vol. 36 at 60) 12, 38, 71, 83

Kan. Exh. 448 (Admitted 11/16/90, RT Vol. 30 at 76) 12, 38, 45, 72

Kan. Exh. 689 (Admitted 9/21/92, RT Vol. 125 at 81) 79

REPORT OF THE SPECIAL MASTER

Colorado submits this brief in support of its exceptions to the July, 1994 Report of Arthur L. Littleworth, Special Master (hereinafter the "Report"). The Report sets forth the Master's findings and recommendations on the liability phase of the case. Report at 11. Remedy issues, including damages, were severed pending a determination on liability. *Id.*

JURISDICTION

The original jurisdiction of the Court was invoked by the State of Kansas under Article III, Section 2, Clause 2 of the United States Constitution and 28 U.S.C. §1251(a)(1).

ARKANSAS RIVER COMPACT

The Arkansas River Compact is an interstate compact between Colorado and Kansas. The Compact was signed by Commissioners for Colorado and Kansas on December 14, 1948. Jt. Exh. 1.[1] The Compact became effective on May 31, 1949, after it was ratified by the legislature of each state and consented to by Congress. Arkansas River Compact, Art. IX-A; Act of May 31, 1949, Ch. 155, 63 Stat.

[1] Exhibits and the reporter's transcript are cited in this brief in the same way the Master cited them in his Report. Report at xvi, 12-13.

145 (1949) (Jt. Exh. 2).[2] The provisions of the Arkansas River Compact are set forth in Exhibit 1 of the Appendix to the Report. Report-App. at 1-17.

STATEMENT OF THE CASE

In March 1986, Kansas was granted leave to file this action against Colorado. 475 U.S. 1065 (1986). In its complaint, Kansas alleged that Colorado had violated the Arkansas River Compact. The Special Master's Report describes the major issues and claims of the parties. Report at 58-64.

In his Report, the Master recommends that the Court find that post-compact well pumping in Colorado has violated Article IV-D of the Arkansas River Compact. Report at 336. He also recommends that the Court find that Kansas failed to prove its claim that operation of the so-called Winter Water Storage Program has violated the Compact. *Id.* Finally, he recommends that the Court confirm his earlier decisions to dismiss all other claims and counterclaims. *Id.* at 336-37.

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[2] The acts of the state legislatures ratifying the Compact are printed in hearings held by Congress on the Compact. *Arkansas River Compact: Hearing on S. 1448 Before the Senate Comm. on Interior and Insular Affairs*, 81st Cong., 1st Sess. 8-9, 18-19 (1949) [hereinafter cited as *Senate Hearing*] (Jt. Exh. 15); *Arkansas River Compact: Hearing on H.R. 4151 Before the Subcomm. on Irrigation and Reclamation of the House Comm. on Public Lands*, 81st Cong., 1st Sess. 10-11, 31 (1949) [hereinafter cited as *House Hearing*] (Jt. Exh. 16).

If the Court affirms his Report, the Master recommends that the case be remanded for further evidence to quantify depletions to usable Stateline flows and for completion of the remedy phase. Report at 290, 337.

One ruling in the Report deserves special notice. Although the Master found that Kansas knew or should have known of the effects of post-compact well pumping in Colorado by 1968 and that Kansas did not complain about such pumping until 1984 at the earliest, he rejected Colorado's defense of laches. Report at 153-70. This ruling, if affirmed by the Court, would allow Kansas to claim damages for depletions to usable Stateline flows dating back to 1950. *Id.* at 164-68.

A. DESCRIPTION OF THE ARKANSAS RIVER BASIN

The Arkansas River originates on the eastern slope of the Rocky Mountains, upstream of the old mining town of Leadville, Colorado. Report at 35. The river begins as a mountain torrent until, near Canon City, it emerges from the mountains into a foothills region. *Kansas v. Colorado*, 206 U.S. 46, 105 (1907). The river then flows through a narrow valley until it reaches the City of Pueblo, where the river leaves the foothills and meanders across the High Plains into Kansas.[3]

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[3] For an excellent description of the Arkansas River Basin in Colorado and Kansas, see U.S. Dept. of Interior, Bureau of Reclamation, *Report on the Upper Arkansas River Basin, Colorado-Kansas* 5-19 (1969) (Jt. Exh. 105).

The Arkansas River Valley between Pueblo, Colorado, and Garden City, Kansas, is what westerners call semi-arid, which means that crops generally cannot be grown without irrigation. Jt. Exh. 105 at 7. Rainfall averages less than 12 inches per year at Pueblo, which gradually increases to an average of slightly more than 18 inches per year at Garden City. *Id.* at 7; Jt. Exh. 140 at 15.

The Arkansas River Valley is a fertile agricultural area, but the water supply in the Arkansas River is not adequate to irrigate the lands along the river and is subject to wide fluctuations not only from year to year, but also from season to season and day to day. Jt. Exh. 105 at 13, 34, 69; *Colorado v. Kansas*, 320 U.S. 383, 396 (1943). Runoff from mountainous areas above Canon City, which is derived primarily from snowmelt, is more uniform from year to year and fluctuates less widely than runoff from foothills and plains drainage areas. Jt. Exh. 5 at 10. As a result, the mountain runoff is more usable and is diverted for irrigation largely in Colorado. *Id.*[4]

More than 60 percent of the average annual mainstem runoff in Colorado occurs during April, May, and June. Jt. Exh. 105 at 60. Lands under most canals experience shortages of surface water after June, when the

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[4] The flow of the river at Canon City (excluding transmountain imports) averaged 499,200 acre-feet per year over the period 1908-84, varying from 217,200 acre-feet in 1940 to 896,600 acre-feet in 1957. Jt. Exh. 29, Table 6D2. In contrast, the flow of the Purgatoire River, the largest tributary of the Arkansas River, measured near Las Animas just upstream from where it joins the Arkansas River, averaged 61,659 acre-feet per year for the period 1950-85, ranging from 4,571 acre-feet in 1975 to 271,256 acre-feet in 1965. Colo. Exh. 836, Col.(2).

snowmelt is generally gone. Jt. Exh. 92 at i. Shortages in Colorado are partially alleviated by reservoir releases, transmountain imports, and ground water pumping. Jt. Exh. 105 at 60.

Tributary inflow below Pueblo provides a portion of the water supply to ditches on the Arkansas River. Jt. Exh. 105 at 58. However, these streams are mostly intermittent and their flow is derived primarily from intense summer rainstorms, so that they do not provide a dependable supply to ditches on the Arkansas River. Jt. Exh. 92 at 5. Most of the flood flow above John Martin Reservoir is now captured by reservoirs in Colorado, but tributaries below John Martin are largely unregulated. Jt. Exh. 105 at 43.[5]

Prior to the construction of John Martin Reservoir, Stateline flows averaged 280,800 acre-feet per year over

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[5] The John Martin Reservoir project (which was originally known as the Caddoa Reservoir Project) was authorized for construction by the U.S. Army Corps of Engineers in 1936 to provide flood control and water conservation in Colorado and Kansas. Arkansas River Compact, Art. III-D. Potential usefulness of the reservoir in facilitating a settlement of the long-standing interstate controversy between Colorado and Kansas was also a consideration in authorization of the project. H. Kramer, *Report to the Congress of the United States on the Proposed Arkansas River Compact Between Colorado and Kansas, reprinted in Senate Hearing, supra* note 2, at 32-33 (1949) [hereinafter cited as "Kramer Report"] (Jt. Exh. 15). General Kramer's report to Congress, together with a General Map of the Arkansas River Basin, is also reprinted in the *House Hearing, supra* note 2, at 34-41 (Jt. Exh. 16). Water stored in the conservation pool of John Martin Reservoir is apportioned between Colorado and Kansas in the Arkansas River Compact. Arkansas River Compact, Art. II-B, V.

the period 1908-1942, varying from 30,900 acre-feet in 1940 to 1,342,400 acre-feet in 1942. Jt. Exh. 5 at 15, Summary Table C. It was expected that the operation of John Martin in accordance with the provisions of the Arkansas River Compact would reduce total Stateline flows by storing flood flows and winter flows which had previously been unused. Report at 54, 144. After the Compact became effective, Stateline flows averaged 144,051 acre-feet per year for the period 1950-85. *Id.* at 53. Even after the Compact became effective, however, it was expected that there would still be substantial amounts of water passing Garden City unused each year which would be available for future development in the basin.[6]

B. HISTORY OF IRRIGATION AND WELL DEVELOPMENT IN THE ARKANSAS RIVER BASIN

Colorado

Irrigation in the Arkansas River Basin in Colorado began in 1859 shortly after the Pikes Peak gold rush, although large-scale irrigation did not begin until 1874, near Rocky Ford. Jt. Exh. 105 at 8.

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[6] Shortly after the Compact became effective, the U.S. Bureau of Reclamation estimated that there was an average of about 48,000 acre-feet per year available for storage in excess of the requirements of water users in Kansas. Colo. Exh. 112 at 3-4, 6. This estimate was based on water which could be diverted at rates of 200 cubic feet per second ("cfs") or less. *Id.* at 6, note b. If flood flows in excess of 200 cfs had been considered, there was more unused water passing Garden City.

The major irrigation systems in the Arkansas River Valley in Colorado were developed primarily during the 1880s. Jt. Exh. 105 at 89. By 1910, a complex system of private irrigation ditches and reservoirs had been developed in Colorado to irrigate approximately 325,000 acres between Pueblo and the Stateline. *Id.* at 8, 58; Report at 37. The river supply was inadequate to irrigate this acreage, and by 1935 seven projects had been constructed to import water into the Arkansas River Basin in Colorado, mostly from the Colorado River Basin (commonly referred to as "transmountain imports"). Jt. Exh. 105 at 8, 83-85. At the time the Compact was negotiated, transmountain imports were averaging approximately 43,000 acre-feet per year. Report at 49. With the completion of the Fryingpan-Arkansas Project, a $432 million water project authorized by Congress in 1962,[7] the United States Bureau of Reclamation estimated that total diversions from the Colorado River Basin into the Arkansas River Basin would average 196,000 acre-feet annually, 38 percent of the average annual flow of the Arkansas River at Pueblo. Jt. Exh. 105 at 2.[8] These transmountain imports

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[7] Act of Aug. 16, 1962, Pub.L. No. 87-590, 76 Stat. 389 (1962) (Jt. Exh. 168); as amended by the Reclamation Development Act of 1974, Pub.L. No. 93-493, Title XI, §1101, 88 Stat. 1497-98 (increasing the appropriation for the Fryingpan-Arkansas Project to $432,000,000) (Jt. Exh. 169). For a description of the Fryingpan-Arkansas Project, see Jt. Exh. 105 at 102-07.

[8] In 1962, the average annual flow of the Arkansas River at Pueblo was about 514,000 acre-feet per year, including transmountain imports. Jt. Exh. 105 at 58. The mainstem flow at Pueblo cited by the Master, Report at 51, is a "composite flow" which was developed by the Kansas experts for use in the Kansas hydrologic-institutional model and includes inflow

are important because the Arkansas River Compact excludes imported water from the apportionment to Kansas. Report at 257; Arkansas River Compact, Art. III-B, IV-A.

Ground water has been used for irrigation for many years in the Arkansas River Valley in Colorado, primarily to supplement surface supplies. Jt. Exh. 105 at 39. According to a careful study made by Colorado, Report at 204, there are 717 large-capacity (100 gallons per minute or greater) irrigation wells in Colorado along the mainstem of the river with appropriation dates earlier than 1950. Colo. Exh. 165*, Table A.1 (Total number of wells, 1949). By 1985, there were about 2,062 large-capacity irrigation wells along the mainstem in Colorado. *Id.*[9] Most of the new wells constructed in Colorado after the Compact became effective were constructed prior to 1965, when the Colorado legislature enacted legislation to authorize the State Engineer to deny well permits on the basis of injury to other water rights. Report at 109-10.

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from Fountain Creek and diversions by the Bessemer Ditch, which actually diverts above Pueblo. Colo. Exh. 831; RT Vol. 113 at 121-24 (Helton). Not all of the water imported into the Arkansas River Basin is used in the Arkansas River Valley below Pueblo. Report at 48-49. Average deliveries of transmountain water below Pueblo have averaged approximately 120,000 acre-feet in recent years. *Id.* at 49.

[9] The Master states that Colorado's total for the number of wells is 2,057. Report at 203, citing Colo. Exh. 851. That exhibit was prepared to compare the number of wells in the Kansas well database and the Colorado well database. For purposes of that comparison, five wells under the Highland Ditch on the lower Purgatoire River were excluded in the Colorado total shown on Colo. Exh. 851.

The amount of ground water pumping in Colorado was a subject of considerable dispute in this case; but there was no dispute that pumping in Colorado had increased substantially after the Compact became effective. Report at 115. According to Colorado's estimates, total pumping along the river from Pueblo to the State-line increased from 41,458 acre-feet in 1950 to a maximum of 285,887 acre-feet in 1976. Colo. Exh. 852. According to Kansas' estimates, pumping increased from 31,201 acre-feet in 1950 to a maximum of 314,749 acre-feet in 1976. *Id.* The amount of pre-compact pumping was subject to much greater dispute, as will be discussed later in this brief.

Kansas

In Kansas, irrigation from the Arkansas River began in 1879. Jt. Exh. 105 at 38; *House Hearing, supra* note 2, at 31 (Statement by George S. Knapp).[10] Irrigated acreage

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[10] The Master, relying on a report prepared by an historian called by Kansas states: "The settlement of Kansas, which was admitted to the Union in 1861, commenced before that in Colorado. It was not until 1876 that Colorado became a state. By the 1870s, the transformation of prairie grasslands in Kansas into irrigated farms and small towns was well underway." Report at 1-2. This gives an erroneous and distorted picture of development in the Arkansas River Basin in Colorado and Kansas upstream from Garden City, Kansas. Settlement and irrigation began first in the Colorado portion of the basin following the Pikes Peak gold rush in 1858. *See Kansas v. Colorado*, 206 U.S. at 107-08 (tables of census data for population and number of acres cultivated in Colorado counties). Significant settlement in Hamilton, Kearny, and Finney Counties in Kansas did not begin until the 1880s. *Id.* at 110-12 (tables of census data for population and number of acres cultivated in Kansas counties).

grew steadily from approximately 15,000 acres in 1895, *Colorado v. Kansas*, 320 U.S. at 399, to about 66,000 acres in 1949. Report at 221. The ditches in Kansas under the Arkansas River Compact are located in Hamilton, Kearny, and Finney Counties and divert from the Arkansas River upstream from Garden City, Kansas. Jt. Exh. 105 at 111-14.[11]

The use of ground water for irrigation in Kansas dates back to about 1890 when windmill-powered pumps were first used. Jt. Exh. 105 at 40. By the late 1930s, many farmers in Kansas supplemented diversions from the river with irrigation wells and some used wells exclusively. *Colorado v. Kansas*, 320 U.S. at 399. In 1962, the Bureau of Reclamation surveyed the irrigation practices under the eight ditches in Kansas and found that the land irrigated in the area had increased to an estimated 75,800 acres. Jt. Exh. 105 at 130. Of this acreage, 71 percent (53,839 acres) used both surface and ground water, 17 percent (12,846 acres) used ground water only, and 12 percent (9,110 acres) used surface water only. *Id.* at 112, 130. In 1988, the Kansas Division of Water Resources did a study of acres irrigated in the ditch service areas and along the river and found a total of 98,274 acres irrigated by surface and ground water. RT Vol. 31 at 72 (Frost).

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[11] The reason there are no ditches below Garden City is due to the physical conditions peculiar to the Arkansas River Basin in Kansas. Kramer Report, *supra* note 5, at 34 (Jt. Exh. 15); *see also House Hearing*, *supra* note 2, at 46-48 (Statements of General Hans Kramer, federal representative to the Arkansas River Compact Commission, and George S. Knapp, Chairman of the Kansas Commissioners) (describing the peculiar physical characteristics of the Arkansas River).

Outside the ditch service areas there was a considerable expansion of irrigated acreage, particularly in the late 1960s and 1970s when center-pivot irrigation sprinkler systems were developed which could irrigate lands which had not been leveled. Report at 221; Jt. Exh. 140 at 13. The U.S. Geological Survey (USGS) estimated that in 1980 there were approximately 351,000 acres in Hamilton, Kearny, and Finney Counties irrigated by surface water and ground water hydrologically connected to the Arkansas River,[12] a more than five-fold increase since the Compact was signed.

Ground water pumping in Kansas increased as irrigated acreage increased.[13] In 1939, the USGS estimated that about 50,000 acre-feet had been pumped for irrigation

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[12] Jt. Exh. 139 at 15 (31,000 acres in the phase I study area); Jt. Exh. 140 at 11 (320,000 acres in the phase II study area). The phase I study area was from the Stateline to the Bear Creek Fault zone. Jt. Exh. 139 at 3. It is shown on Figure 1 of Jt. Exh. 139 at 2. The phase II study area, which included portions of Kearny and Finney Counties, is shown in Figure 1 of Jt. Exh. 140 at 2.

[13] Census figures for Hamilton, Kearny, and Finney Counties for 1929, 1939, 1949, 1959, and 1964 are tabulated by the Bureau of Reclamation in Jt. Exh. 105 at 74. In 1939, irrigated acreage in the three counties was about 56,000 acres. By 1964, it had increased to about 160,000 acres. *Id.* The Bureau of Reclamation noted that the rapid expansion of irrigation in southwestern Kansas had been made possible primarily through the use of ground water, "but not without some serious local problems." *Id.* at 134. The Bureau of Reclamation warned that water levels were declining, that ground water "mining" was occurring in the Garden City area, and that as overdrafts continued, the yield of individual wells would decrease. *Id.* at 40.

in Hamilton, Kearny, and Finney Counties.[14] In 1979 and 1980, the USGS estimated that about 803,000 acre-feet had been pumped in the three counties from wells which were hydrologically connected to the Arkansas River.[15]

Much of the increased pumping in Kansas is from what is commonly referred to as the "Ogallala Aquifer," which underlies the Arkansas River and its alluvium east of the Bear Creek fault zone. Report at 223; *see* Jt. Exh. 138 at 25-28; Jt. Exh. 139 at 2, Fig. 1. The Master states that there is a "major confining zone" which separates the alluvium from the Ogallala Aquifer and that the upper aquifer and the Ogallala Aquifer "act independently." Report at 222. This implies a much greater degree of separation than exists. The USGS did an extensive study of the interrelationship of aquifers in the area in the early 1980s. Jt. Exh. 140. The USGS concluded that as ground water development intensified, "water from the valley and upper aquifer leaked downward through the confining zone to the lower aquifer." Jt. Exh. 140 at 22. The

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[14] Kan. Exh. 447 at 118 (27,100 acre-feet in Finney County); Kan. Exh. 448 at 97-98 (23,000 acre-feet in Hamilton and Kearny Counties).

[15] Jt. Exh. 139 at 8 (65,000 acre-feet pumped in 1979); Jt. Exh. 140 at 11 (738,000 acre-feet pumped in 1980). There were no complete estimates for ground water withdrawals in Hamilton, Kearny, and Finney Counties for the intervening years, although a report prepared by the Kansas Water Resources Board showed a steady increase in irrigated acreage and acre-feet applied in the three counties from 1950 to 1966. Jt. Exh. 86 at 4-5 and county data for Hamilton, Kearny, and Finney Counties. Estimates of ground water withdrawals in Finney County by the USGS also showed a steady increase between 1945 and 1963. Jt. Exh. 138 at 70.

USGS also concluded that "[t]he result of the increased downward leakage of water from the valley and upper aquifers to the lower aquifer has been the water-table decline observed after 1973 in the valley aquifer near Deerfield; . . . " *Id.* at 23. Further, the USGS concluded that "[d]ownward leakage of water from the upper aquifer to the lower aquifer has led to the dewatering of the upper aquifer on the high plains." *Id.* Thus, while there is some separation between the alluvium and the Ogallala Aquifer, the confining zone is not a barrier to movement of ground water and increased pumping from the Ogallala Aquifer in Kansas has led to water level declines in the alluvium and dewatering of the upper aquifer. *Id.* It has also led to increased transit losses between the State-line and the headgates of Kansas ditches. Report at 226.

C. *COLORADO V. KANSAS*

The opinion in *Colorado v. Kansas*, 320 U.S. 383 (1943), sets the backdrop for this case. In *Colorado v. Kansas* this Court rejected a Master's finding that Colorado's use of the waters of the Arkansas River had materially increased, as well as his recommendation for an allocation of the flows of the river between Colorado and Kansas. The Court did so on the basis that Kansas had not proven that Colorado's use had materially increased and that the increase had worked a serious detriment to the substantial interests of Kansas. *Id.* at 400. Among the factors that persuaded the Court that Kansas had not met its burden of proof was the fact that Kansas had taken no

action while improvements based on irrigation went forward in Colorado for twenty-one years. *Id.* at 394. The Court said:

> These facts might well preclude the award of the relief Kansas asks. But in any event, they gravely add to the burden she would otherwise bear, and must be weighed in estimating the equities of the case.

320 U.S. at 394, *citing Washington v. Oregon*, 297 U.S. 517, 526 (1936). The Court also noted that despite the claim that Colorado's use had materially increased, there had been a steady increase in acreage irrigated in Kansas, from 15,000 acres in 1895 to 56,000 acres in 1939. 320 U.S. at 399.

The 1943 opinion made no mention of John Martin Reservoir, which had been authorized by Congress in 1936. Report at 45. At the time of the Court's decision, the reservoir was under construction on the mainstem of the Arkansas River in Colorado, approximately 58 miles upstream from the Stateline. *Id.* Water stored in the reservoir was allocated between the states pursuant to a stipulation signed in 1933; but, the stipulation was only effective until this Court's decision in *Colorado v. Kansas*. *Id.* at 78-79. Although the Court did not address John Martin Reservoir, it encouraged the states to settle their disputes by agreement, 320 U.S. at 392, which they did.

D. THE ARKANSAS RIVER COMPACT

In December 1948, after three years of negotiations, Commissioners for Colorado and Kansas signed the Arkansas River Compact. The Compact became effective

on May 31, 1949, after it had been ratified by the legislature of each state and consented to by Congress.[16]

The Compact does not apportion the waters of the Arkansas River between Colorado and Kansas based on beneficial consumptive use or a Stateline delivery obligation, as in some other interstate water compacts, but instead gives both states the right to make demands for releases from John Martin Reservoir at the times and at the rates specified in the Compact. Arkansas River Compact, Art. V. The Compact did not prohibit future development of the waters of the Arkansas River, "[p]rovided, that the waters of the Arkansas River, as defined in Article III, shall not be materially depleted in usable quantity or availability for use to the water users in Colorado and Kansas under this Compact by such future development or construction." *Id.*, Art. IV-D. General Hans T. Kramer, the federal representative to the Commission which negotiated the Compact and who served as its chairman, Report at 91, 92, explained the history of the negotiations in a letter to the U.S. Army Corps of Engineers in which he described the philosophy of the Compact as "Live and Let Live." Colo. Exh. 57. That philosophy accurately describes the attitude of both states toward post-compact well development for many

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[16] For an excellent summary of the provisions of the Arkansas River Compact, see J. Breitenstein, *The Law of the Arkansas River* at 10-12 (paper presented to the Arkansas-White-Red Basins Inter-Agency Committee meeting, July 18, 1951) (Colo. Exh. 650). Jean Breitenstein was a recognized expert in western water law and was later appointed as Special Master in *Texas v. New Mexico*. *See Texas v. New Mexico*, 482 U.S. 124, 127 (1987).

years. As long as well development was occurring in both states, there were no complaints about such development.[17]

For 30 years after the Compact became effective there were relatively few disputes over the use of waters of the Arkansas River; however, in 1980, Kansas complained about storage in Trinidad Reservoir, a federal reservoir on the Purgatoire River, Report-App. at 56, and thereafter made complaints about the Winter Water Storage Program in Colorado. Report at 312. In late 1983, Kansas hired an engineering firm to investigate the reasons for declining Stateline flows; and, in March 1985, Kansas

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[17] The Master concluded that General Kramer's remarks "relate only to the conservation pool in John Martin and the ability of both states to draw upon it according to need." Report at 106. This interpretation of General Kramer's remarks is not correct. In 1954, General Kramer, who was appointed as the first federal representative to the Arkansas River Compact Administration, discussed the intent of the framers of Article IV-D of the Compact. Minutes of Arkansas River Compact Administration Annual Meeting (Dec. 14, 1954) at 11-13 (Jt. Exh. 19). He stated that "[a]s the author of portions of the Compact and as Chairman of the negotiating commission, he felt that he was in a position to know the meaning of the wording as adopted." *Id.* at 11. After quoting from portions of his report to Congress and the record of the Compact Commission, General Kramer stated that "the basic motivating principle in formulation of the Compact was, 'Live and Let Live.' " *Id.* at 13. In determining whether a depletion from a proposed federal project on the Purgatoire River was material, General Kramer stressed that the principle of ' Live and Let Live" should be adhered to. *Id.* Thus, General Kramer believed that the "Live and Let Live" philosophy applied not only to the ability of both states to draw on the conservation pool, but also to future development in the basin.

requested an investigation by the Arkansas River Compact Administration[18] of alleged Compact violations caused by the operation of Trinidad Reservoir, the operation of the Winter Water Storage Program, and, for the first time, post-compact well pumping in Colorado. *Id.* at 153.

E. THE CURRENT DISPUTE

In December 1985, Kansas filed a motion for leave to file a complaint against Colorado, together with a complaint alleging that Colorado had rejected its requests to investigate the alleged Compact violations. Report at 15.

In March 1986, the Court granted Kansas' motion and allowed Colorado 60 days to file an answer. 475 U.S. 1069 (1986). The Master has provided a detailed summary of the procedural history of the case in his Report, including the breakdown suffered by Kansas' chief technical expert witness, Timothy J. Durbin, during cross-examination after numerous errors were brought out in various Kansas exhibits and the Kansas hydrological-institutional model ("H-I Model"), which he had developed to support Kansas' claims. Report at 15-34. The Master has also

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[18] The Arkansas River Compact Administration is an interstate agency created by the Compact. Arkansas River Compact, Art. VIII-A. The membership of the Compact Administration consists of three representatives of each state and a federal representative who acts as chairman but has no vote. *Id.*, Art. VIII-C. The Compact provides that violations of any of the provisions of the Compact or other actions prejudicial thereto which come to the attention of the Compact Administration "shall be promptly investigated by it." *Id.*, Art. VIII-H.

described the substantial delay and the changes to Kansas' case resulting from Mr. Durbin's hospitalization and replacement by other experts.[19] *Id.* at 29-31, 241-48. We will not repeat that full history here, except to note that the numerous errors and poor assumptions in the H-I Model did affect the credibility of Kansas' case. *Id.* at 236-37, 315-16, 335. As the Master states:

> The major changes in Kansas' position and evidence cannot be ignored. For some five years the Kansas experts worked to accumulate the necessary data and to develop the H-I model in order to support the state's claims. Yet after Colorado's cross-examination during trial uncovered numerous errors and shortcomings in the Kansas evidence, and after the trial recess caused by Durbin's hospitalization, Kansas' replacement experts testified to substantially different conclusions than those resulting from the original H-I model. Brent E. Spronk, one of Kansas' replacement experts, testified openly that the results of the original H-I model were not reliable.

Report at 236-37 (footnotes omitted).

After the Kansas replacement experts corrected errors and addressed many of the poor assumptions in H-I Model, and in the process added some 900 lines of new code to the program for the model, the model was

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[19] The Master, over Colorado's objection, granted Kansas' motion for a lengthy continuance to replace Mr. Durbin in part because of "the important sovereign interests that are involved in this case, . . . " Report-App. at 91-92.

unable to predict diversions and Stateline flows accurately, even on a long-term basis. Report at 245-46. The model over-predicted diversions by ditches in Colorado and under-predicted Stateline flows. *Id.* This was due, in part, to the fact that the replacement experts did not attempt to correct all of the shortcomings in the modeling process which had been identified by Colorado's experts. Report at 238-39.[20]

To improve the model's ability to predict diversions and Stateline flows, the Kansas replacement experts resorted to a series of Rube Goldberg-like steps to calibrate the model. First, they reduced the known, measured capacity of many of the Colorado canals in the model to limit the amounts they could divert. Report at 246. Second, they added "diversion reduction factors" to reduce the amounts that could be diverted under some of the larger water rights in Colorado. *Id.* Third, they routed the water which these rights were not permitted to divert because of the "diversion reduction factors" directly to John Martin Reservoir or the Stateline. *Id.* at 246-47.

Colorado's experts were highly critical of the way in which the model had been calibrated by the Kansas

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[20] The H-1 Model is a computer program which was developed to predict diversions and streamflows in Colorado from Pueblo to the Stateline. Report at 230-34. In addition to diversions and streamflows, many factors are considered in the model, including reservoir operations, tributary inflows, crop consumption, non-crop consumption, and irrigation pumping. *Id.* at 233-34. As the Master comments, "[i]t represents an enormously difficult task, the complexities of which may not have been fully appreciated when Durbin began to develop the basic structure of the model." *Id.* at 230 (footnote omitted).

replacement experts, Report at 247, although one of Colorado's principal experts did concede, after the errors and poor assumptions had been corrected, that the H-I Model did provide a rough idea, on a long-term basis, of the impacts of well pumping in Colorado. *Id.* at 253. Colorado and the United States' experts did not agree, however, that the model was reliable to evaluate the effects of the Winter Water Storage Program, *id.* at 322-27, and the Master has recommended that the Court find that Kansas failed to prove its claim that operation of the Program has violated the Compact. *Id.* at 335.

To put the errors and poor assumptions in the original H-I Model in perspective, it is helpful to compare the results of the model before and after it was revised. In the original version presented by Mr. Durbin, the model calculated total depletions of Stateline flows from post-compact well pumping in Colorado (before any offset for transmountain return flows) of 1,581,000 acre-feet for the period 1950-85. Report at 235; Kan. Exh. 111* (12/6/90) (Comparison "F"). The revised version of the model calculated total depletions of Stateline flows from post-compact well pumping in Colorado of 852,000 acre-feet. Kan. Exh. 111 * * * (Historical Pumping). Based on the results of the original model, the Kansas claim for the combined effects of post-compact pumping and the Winter Water Storage Program (after transmountain return flows had been accounted for and depletions were limited to depletions of usable Stateline flows) was 917,000 acre-feet. Report at 235. The Kansas claim based on the revised model was reduced to 489,000 acre-feet. *Id.* at 237, 256. However, this amount was based on a new method to calculate depletions to usable Stateline flows. *Id.* at 255.

When depletions to usable Stateline flows were calculated using the method Mr. Durbin had developed and which the Master concluded was the best of several methods presented, Kansas' claim was reduced to 365,400 acre-feet, *id.* at 256 note 97, 40 percent of the original claim.

All of these results were based on Kansas' estimates of post-compact well pumping in Colorado and Kansas' assumption about the amount pre-compact wells in Colorado were entitled to pump after the Compact became effective (*i.e.*, 11,000 acre-feet per year). Report at 183, 202 & note 70. When Colorado's estimates of post-compact well pumping and the amounts pre-compact wells in Colorado were entitled to pump after the Compact became effective were used in the model, the depletions calculated by the model dropped substantially. For example, when reduced to depletions of usable Stateline flows using the Durbin usable flow analysis with the Larson coefficients, which the Master concluded was the best of the methods presented, depletions from post-compact well pumping dropped from 355,900 acre-feet to 230,900 acre-feet. Colo. Exh. 975, Comparisons 6 and 5. When accretions to usable Stateline flows predicted by the model were considered, net depletions dropped to 194,800 acre-feet. *Id.*, Comparison 5. Moreover, these amounts do not include increases to usable Stateline flows resulting from the 1980 Operating Plan for John Martin Reservoir.

While Colorado's experts conceded that post-compact well pumping in Colorado had depleted Stateline flows to some extent, Colorado showed, and the Master found, that Kansas had known about post-compact well

pumping in Colorado for many years, but did not complain about such pumping until 1984, at the earliest. Report at 155-56. Nevertheless, the Master rejected Colorado's defense of laches. *Id.* at 170. Colorado also showed that the Operating Plan for John Martin Reservoir, which was adopted by the Compact Administration in 1980, had increased usable Stateline flows. The Master concluded, however, that the 1980 Plan was not a bar to Kansas' claims and that increases in usable Stateline flows resulting from the Plan should not offset depletions of usable Stateline flows caused by post-compact well pumping. *Id.* at 180-81.

Although the Master concluded that post-compact well pumping in Colorado had violated the Compact and rejected Colorado's equitable defenses, he did not make a finding of the amount of the depletions to usable Stateline flows from post-compact well pumping in Colorado. He did not do so for several reasons. First, he ruled that the "pre-compact pumping allowance" used in the Kansas model should be increased from 11,000 acre-feet per year to 15,000 acre-feet per year and that the post-compact pumping estimates used in the model should be modified for some Colorado adjustments. Report at 199-200, 219. Second, he questioned the comparison used by the Kansas replacement experts to calculate depletions with the revised model. *Id.* at 259-60. Third, he felt that additional evidence was necessary on the issue of accretions to usable Stateline flows calculated by the model. *Id.* at 260, 262-63. Thus, if the Court affirms his rulings on the liability phase, the Master recommends that the case be remanded for further evidence to quantify depletions

to usable Stateline flows and for completion of the remedy phase. *Id.* at 290, 337.

SUMMARY OF ARGUMENT

1. Kansas delayed 29 years after it knew or, in the exercise of reasonable diligence, should have known of facts giving rise to a claim against Colorado for post-compact well pumping in Colorado; Kansas had no justifiable excuse for its delay; and Colorado was prejudiced by Kansas' delay. The policy disfavoring the untimely assertion of rights which underlies the defense of laches is applicable against a state in a controversy between states in this Court. The considerations of public policy which support application of the rule *nullum tempus* to a domestic sovereign when it sues in its own courts are not controlling in a controversy between states in this Court. While Kansas may not be barred from seeking prospective relief, Kansas should be barred from claiming damages prior to 1985 when it first requested an investigation of post-compact well pumping by the Arkansas River Compact Administration.

2. Article IV-D of the Arkansas River Compact does not limit pre-compact wells in Colorado to pumping the highest amount pumped during the pre-compact period. Moreover, the USGS estimates of pumping used by the Special Master to determine the highest amount pumped are not reasonable because there is no data to support those estimates, the estimates are inconsistent with power data that is available, and the person who made those

estimates had died and was not available to explain the data and assumptions used to make those estimates.

3. Under general principles of contract law, increases in usable Stateline flows resulting from the adoption of the 1980 Operating Plan for John Martin Reservoir should offset depletions to usable Stateline flows caused by post-compact well pumping in Colorado.

4. The standard of proof in a controversy between states involving an alleged breach of an interstate compact should be the "clear and convincing" standard, which reflects the significant interest society has in the outcome of such suits and guards against erroneous factual determinations.

ARGUMENT

I. KANSAS' CLAIM FOR DAMAGES SHOULD BE BARRED BY LACHES

In its Answer, Colorado raised laches as an affirmative defense. Report-App. at 32, ¶ 2. In proceedings before the Special Master, Kansas took the position that laches was not applicable against a state. Report at 149. *See Illinois v. Kentucky*, 500 U.S. 380, 388 (1991) ("The Special Master correctly observed that the laches defense is generally inapplicable against a State."); *Block v. North Dakota*, 461 U.S. 273, 294 (1983) (O'Connor, J., dissenting) ("The common law has long accepted the principle *'nullum tempus occurrit regit'* – neither laches nor statutes of limitations will bar the sovereign.").

Special Master Littleworth noted that no interstate compact enforcement case had been found in which the Supreme Court had directly held that laches does or does not apply against a state. Report at 150. He said that one argument in favor of applying laches is that the Court has described its jurisdiction in cases between states as "basically equitable in nature." *Id., quoting Ohio v. Kentucky*, 410 U.S. 641, 648 (1973). He noted, however, that even in equity cases, it is generally held that laches does not apply against a public agency. Report at 150.[21]

The Master concluded, however, that it would be a mistake to decide the issue solely on the basis of "conventional rules of equity." Report at 150. He said that in exercising the "unprecedented" grant of judicial power over controversies between states, "the inquiry really is one of fundamental justice rather than what is the historical or even the current practice of courts exercising less extraordinary powers." *Id.* at 151. Noting cases between states which had referred to a policy disfavoring the untimely assertion of rights,[22] he concluded:

> Clearly, although it is not based on equity jurisprudence as such, the rule to be followed here is that there is some point at which unexcused delay by a state in connection with an interstate apportionment will work to bar relief.

Id. at 152.

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[21] More accurately stated, the rule is that laches does not bar the government when suing to enforce public rights, at least when the government sues in its own courts. *Guaranty Trust Co. v. United States*, 304 U.S. 126, 132-36 (1938).

[22] *Illinois v. Kentucky*, 500 U.S. at 388; *Colorado v. Kansas*, 320 U.S. 383, 394 (1943); *Washington v. Oregon*, 297 U.S. 517, 528-29 (1936); *Missouri v. Illinois*, 200 U.S. 496, 520 (1906).

Although the Master concluded that this rule (which will be referred to as laches[23]) could be applied against a state, he ruled that Kansas had not been guilty of inexcusable delay in making its well claim and that Colorado had not been prejudiced by Kansas' failure to press its claim earlier. Report at 170. Colorado takes exception to these latter rulings.

A. LACHES CAN BE APPLIED AGAINST A STATE IN A CONTROVERSY BETWEEN STATES

Laches is an equitable doctrine which is designed to prevent stale claims for the peace, repose, and welfare of society. As the Court said in *Brown v. County of Buena Vista*, 95 U.S. 157, 161 (1877):

> The law of laches, like the principle of the limitation of actions, was dictated by experience. . . . The lapse of time carries with it the life and memory of witnesses, the muniments of evidence and other means of proof. The rule which gives it the effect prescribed is necessary to the peace, repose and welfare of society.

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[23] International law recognizes laches through the principle of "extinctive prescription." 1 *Oppenheim's International Law* §155c, at 349 (Lauterpacht ed., 8th ed. 1955) ("The principle of extinctive prescription, that is the bar of claims by lapse of time, is recognized in International Law."); I. Brownlie, *Principles of Public International Law* 504 (4th ed. 1990) ("The lapse of time in presentation may bar an international claim in spite of the fact that no rule of international law lays down a time limit.").

See also Penn Mutual Life Ins. Co. v. Austin, 168 U.S. 685, 696-99 (1898) (collecting cases); *Gillons v. Shell Co. of California*, 86 F.2d 600, 609-10 (9th Cir. 1936), *cert. denied*, 302 U.S. 689 (1937) (collecting cases).

The rule that a sovereign is exempt from the operation of statutes of limitations and the consequences of laches (*quod nullum tempus occurrit regit*) has been described as "a vestigial survival of the prerogative of the Crown." *Guaranty Trust Co. v. United States*, 304 U.S. 126, 132 (1938). This judicially created rule continues to be applied by courts in the United States, however, because it furthers the public policy of protecting rights vested in the government (federal or state) from injury and loss by the inadvertence of agents upon which the government must necessarily rely. *Block v. North Dakota*, 461 U.S. at 290; *Guaranty Trust*, 304 U.S. at 132; *United States v. Hoar*, 26 F.Cas. 329 (C.C.D.Mass. 1821) (Story, J.).

The rule *nullum tempus* is not applied in every suit brought by a sovereign, however. When a foreign sovereign sues in our courts, the rule is not applied to shield the foreign sovereign from the operation of statutes of limitation or the consequences of laches. *Guaranty Trust*, 304 U.S. at 135-36. It is therefore important to consider the reason a foreign sovereign is not immune from the operation of statutes of limitation or the consequences of laches when it sues in our courts.

In *Guaranty Trust* the Court noted that, based on the principle of comity, a foreign sovereign is not amenable to suit in our courts without its consent. 304 U.S. at 134. But, the Court pointed out, a foreign sovereign which voluntarily appears in our courts abandons its immunity from

suit and subjects itself to the rules of decision of the forum which it has sought. *Id.* The Court then held that the public interest of the forum did not require the application of the rule *nullum tempus* to a foreign sovereign and the community which it represents. *Id.* at 136. For similar reasons, it would be improper to apply the rule *nullum tempus* in a controversy between states in this Court.

When a state invokes the jurisdiction of this Court to resolve a controversy between states, it is in a position similar to a foreign sovereign which voluntarily appears in the courts of another sovereign. As Justice Story said in *Rhode Island v. Massachusetts*, 37 U.S. (12 Pet.) 657, 751 (1838):

> When, too, the highest courts of a kingdom [*i.e.*, England] have most solemnly declared . . . that when a foreign king is a plaintiff, in a court of equity, it can do complete justice; impose any terms it thinks proper; has him in its power, and completely under its control and jurisdiction . . . ; we ought not to doubt as to the course of a State of this Union; as a contrary one would endanger its peace, if not its existence. [Citation omitted.]

See also Texas v. New Mexico, 482 U.S. 124, 128 (1987) ("By ratifying the Constitution, the States gave this Court complete judicial power to adjudicate disputes among them, [citation omitted] and this power includes the capacity to provide one State a remedy for the breach of another.").

In invoking the jurisdiction of this Court to settle a controversy with another state, a state subjects itself to the rules of decision and the policies which govern the

exercise of jurisdiction by this Court. *Rhode Island v. Massachusetts*, 37 U.S. (12 Pet.) at 737. The framers of the Constitution extended the judicial power of the United States to controversies between states, and gave this Court original jurisdiction of cases in which a state is a party, to provide a peaceful means of settling such disputes. *Georgia v. Pennsylvania R.R. Co.*, 324 U.S. 439, 450 (1945); *Principality of Monaco v. Mississippi*, 292 U.S. 313, 328 (1934); *North Dakota v. Minnesota*, 263 U.S. 365, 372-73 (1923); *Kansas v. Colorado*, 185 U.S. 125, 140 (1902); *Rhode Island v. Massachusetts*, 37 U.S. (12 Pet.) at 725.[24]

In a controversy between states, "this court is called upon to settle that dispute in such a way as will recognize the equal rights of both and at the same time establish justice between them." *Kansas v. Colorado*, 206 U.S. 46, 98 (1907); *see also Rhode Island v. Massachusetts*, 37 U.S. (12 Pet.) at 737. It would be inconsistent with the equality of states and would not establish justice between them for this Court to fail to consider the unexcused delay by a state in asserting its rights and the prejudice to a defendant state from failure to press the claim earlier.

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[24] *See* The Federalist, No. 80, at 534 (J. Cooke ed. 1961) ("It seems scarcely to admit of controversy that the judiciary authority of the union ought to extend to these several descriptions of causes. . . . 4th. to all those which involve the PEACE of the CONFEDERACY, whether they relate to the intercourse between the United States and foreign nations, or to that between the States themselves; . . . "). For a discussion of the unique and unprecedented nature of this grant of jurisdiction, see C. Warren, *The Supreme Court and Sovereign States* 32-37 (1924).

And, as the cases cited by the Master show, the Court has taken into account the policy disfavoring the untimely assertion of rights in weighing the equities and establishing justice between states. *E.g., Colorado v. Kansas*, 320 U.S. at 394 ("These facts [Kansas' delay while improvements based on irrigation went forward for twenty-one years] might well preclude the award of the relief Kansas asks. But, in any event, they gravely add to the burden she would otherwise bear, and must be weighed in estimating the equities of the case.")[25]; *Washington v. Oregon*, 297 U.S. at 528-29 ("Here surely is not the diligence that equity exacts of the suitor who invokes its distinctive jurisdiction."); *Missouri v. Illinois*, 200 U.S. 496, 520 (1906) ("It would be contradicting a fundamental principle of human nature to allow no effect to the lapse of time, however long."); *see also Nebraska v. Wyoming*, 507 U.S. ___, ___, 113 S.Ct. 1689, 1691, 123 L.Ed.2d 317, 332 (1993) (arguments foreclosed by post decree acquiescence); *Virginia v. West Virginia*, 206 U.S. 290, 321 (1907) (failure to enter upon the performance under alleged compact for forty-three years).[26]

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[25] Unlike the Court in *Colorado v. Kansas*, the Master did not require Kansas to prove its case by clear and convincing evidence, but only by a preponderance of the evidence. Report at 69-70. Kansas' delay should "gravely add to the burden she would otherwise bear" and "must be weighed in estimating the equities of the case." Applying laches is the appropriate way to do so.

[26] The reasons for applying the rule *nullum tempus* are strongest when the government seeks to protect rights to lands held as sovereign in trust for the public. *Weber v. Board of State Harbor Comm'rs*, 85 U.S. 57 (1873). Yet, even in boundary cases between states, the policy disfavoring the untimely assertion of

Moreover, it would not serve the Court's primary responsibility as an appellate court to ignore the policy disfavoring the untimely assertion of rights and the prejudice to the defendant state which may arise from delay in interstate compact cases. To apply the rule *nullum tempus* would permit states to dredge up stale claims for damages for violation of interstate compacts and burden this Court with cases which are difficult to determine because of the lapse of time and the loss of evidence. Such cases may also present difficult issues concerning enforcement of the Court's decision.[27]

Thus, it would not lead to the just and equitable settlement of controversies between states, it would not

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rights applies through the doctrines of prescription and acquiescence. *Illinois v. Kentucky*, 500 U.S. at 388. The reason for these separate doctrines in boundary disputes is that unreasonable delay in the assertion of rights will confer jurisdiction and title on another sovereign. *Rhode Island v. Massachusetts*, 37 U.S. (12 Pet.) at 734 ("[A]ll dependent rights are settled when boundary is."). Thus, as with adverse possession, the delay in boundary cases must be substantial before it will constitute prescription or acquiescence. On the other hand, in a dispute where untimely delay only bars a claim for compensation for past injury rather than future enforcement of rights, the delay should be much less to constitute unreasonable delay. *See* I. Brownlie, *Principles of Public International Law* 153, 505 (4th ed. 1990) (distinguishing the principle of "extinctive prescription" (laches) from the doctrine of prescription and acquiescence applied in territorial disputes in International Law).

[27] For example, it is one thing to order a state to pay money damages or repay past under-deliveries of water where there has been an ongoing, albeit good-faith, dispute over obligations under a Compact, as in *Texas v. Mexico*, 482 U.S. at 129-31. It is another thing to impose such a remedy on a state which had no reason to believe it would be sued.

promote the peace of the Union, and it would not serve the Court's primary responsibility as an appellate court to hold that laches cannot be applied against a state in a controversy between states in this Court involving a claim for breach of an interstate compact.

B. KANSAS WAS GUILTY OF LACHES IN MAKING ITS WELL CLAIM

Although the Special Master ruled that Kansas' delay, if unexcused, could bar relief, he concluded that Kansas should not be barred by laches from obtaining relief because of its failure to press its well claim earlier. Report at 170.

In reaching this decision, the Master made two preliminary findings. First, he found that there was no substantial evidence that Kansas knew or should have known about the extent or effect of post-compact well pumping in Colorado before 1968. Report at 169.[28] Second, he found that the record supported Colorado's assertion that Kansas had made no complaint about well pumping in Colorado to the Compact Administration, or indeed to any appropriate Colorado officials, before 1984,

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[28] Although it is not entirely clear from the Report, the Master apparently found that Kansas knew or should have known about the extent of post-compact well pumping in Colorado in 1968 because in that year a report was published at the direction of the Colorado legislature (the "Wheeler Report") which contained estimates of pumping between 1940 and 1965. Report at 159-60.

if the Simons, Li report[29] was considered as such, or otherwise before 1985, when Kansas asked the Compact Administration to undertake an investigation under Article VIII-H of the Compact. *Id.* at 155-56.

Notwithstanding the fact that Kansas had delayed for at least 16 years in making a complaint (1968 to 1984), the Master concluded "that Kansas has not been guilty of inexcusable delay in making its well claim, and that Colorado has not been prejudiced by Kansas' failure to press its claim earlier." Report at 170. Colorado takes exception to these findings. While the Master's findings on these issues may deserve respect, the ultimate responsibility for deciding what are correct findings of fact remains with the Court. *Colorado v. New Mexico*, 467 U.S. 310, 317 (1984). This is particularly true where the Master has misapprehended the considerations which govern the decision. *Id.* at 323.

Cases applying laches provide helpful guidance in this case.[30] Laches has been defined as "the neglect or

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[29] In September 1983, Kansas hired Simons, Li & Associates, Inc., an engineering firm, to make an investigation into declining Stateline flows. Jt. Exh. 88 at 1.1. The report was completed in 1984 and provided to Colorado in June of that year. Exhibit 23 to Colorado's Motion to Stay Based on Kansas' Failure to Exhaust Its Administrative Remedies (filed May 13, 1988). The report formed the basis for Kansas' request for a special meeting of the Arkansas River Compact Administration on March 28, 1985, at which it requested an investigation of alleged Compact violations by Colorado. Exhibit 24 at 6 to Colorado's Motion to Stay.

[30] So far as Colorado is aware, there is no statute of limitations that applies to claims for breach of interstate compact

delay in bringing suit to remedy an alleged wrong, which taken together with lapse of time and other circumstances, causes prejudice to the adverse party and operates as an equitable bar." *A.C. Aukerman Co. v. R.L. Chaides Const. Co.*, 960 F.2d 1020, 1028-29 (Fed.Cir. 1992). *Accord Costello v. United States*, 365 U.S. 265, 282 (1961); *Gardner v. Panama R.R. Co.*, 342 U.S. 29, 31 (1951); *Holmberg v. Armbrecht*, 327 U.S. 392, 396 (1946); *Russell v. Todd*, 309 U.S. 280, 287 (1940); *Southern Pac. Co. v. Bogert*, 250 U.S. 483, 488-89 (1919).[31]

Historically, laches developed as an equitable defense based on the maxim *vigilantibus non dormientibus aequitas subvenit* (equity aids the vigilant, not those who sleep on their rights). *Stone v. Williams*, 873 F.2d 620, 623 (2d Cir. 1989), *cert. denied*, 493 U.S. 959 (1989); *Independent Bankers*

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generally or to breach of the Arkansas River Compact specifically. *See* Report at 164 note 58. However, the jurisdiction of the Court is "basically equitable in nature," *Ohio v. Kentucky*, 410 U.S. 641, 648 (1973), and this Court has looked to doctrines of equity as guides to decisions in cases between states. *Texas v. Florida*, 306 U.S. 398, 405 (1939); *see also Vermont v. New York*, 417 U.S. 270, 277 (1974); *Massachusetts v. Missouri*, 308 U.S. 1, 15 (1939).

[31] In recent years, decisions by Federal Courts of Appeal have distinguished the elements necessary to establish laches from the elements necessary to establish estoppel, something not always clear in older cases applying laches. The distinction is important because it carries over into the effects that the two defenses have on litigation. *E.g., Studiengesellschaft Kohle v. Eastman Kodak Co.*, 616 F.2d 1315, 1326 (5th Cir. 1980); *Advanced Hydraulics, Inc. v. Otis Elevator Co.*, 525 F.2d 477, 479 (7th Cir.), *cert. denied*, 423 U.S. 869 (1975). For that reason, Colorado believes that recent Court of Appeals decisions are particularly helpful on the issue of laches.

Assn. of America v. Heimann, 627 F.2d 486, 488 (D.C.Cir. 1980) (per curiam).

The length of time which may be deemed unreasonable has no fixed boundaries, but rather depends on the circumstances of each case. *Young v. The Key City*, 81 U.S. (14 Wall.) 653, 660 (1872); *Aukerman*, 960 F.2d at 1032 and cases cited therein; *Goodman v. McDonnell Douglas Corp.*, 606 F.2d 800, 805-06 (8th Cir. 1979), *cert. denied*, 446 U.S. 913 (1980). While a statute of limitations may provide a frame of reference, it is not controlling as a measure of equitable relief. *Holmberg v. Armbrecht*, 327 U.S. at 396. As the Court said in that case:

> Such statutes have been drawn upon by equity solely for the light they may shed in determining that which is decisive for the chancellor's intervention, namely, whether the plaintiff has inexcusably slept on his rights so as to make a decree against the defendant unfair. See *Russell v. Todd, supra* (309 US [280] at 289, 84 L.Ed. 761, 60 S.Ct. 527 [(1940)]). "There must be conscience, good faith, and reasonable diligence to call into action the powers of the court." *McKnight v. Taylor*, 1 How (U.S.) 161, 168, 11 L.Ed. 86, 88 [(1843)]. A federal court may not be bound by a State statute of limitation and yet that court may dismiss a suit where the plaintiffs' "lack of diligence is wholly unexcused; and both the nature of the claim and the situation of the parties was such as to call for diligence. . . . " *Benedict v. New York*, 250 U.S. 321, 328, 63 L.Ed. 1005, 1011, 39 S.Ct. 476 [(1919)].

Holmberg v. Armbrecht, 327 U.S. at 396.

For the purpose of laches the relevant time period begins to run when the plaintiff knew or, in the exercise of reasonable diligence, should have known of the facts giving rise to its claim. *Aukerman*, 960 F.2d at 1032; *White v. Daniel*, 909 F.2d 99, 102 (4th Cir. 1990); *Jensen v. Western Irrigation & Mfg., Inc.*, 650 F.2d 165, 168 (9th Cir. 1980); *Studiengesellschaft Kohle v. Eastman Kodak Co.*, 616 F.2d 1315, 1326 (5th Cir. 1980). Laches will not be imputed to one who has been justifiably ignorant of facts which create a cause of action, but a plaintiff must be diligent and make such inquiry and investigation as the circumstances suggest. *Benedict v. New York*, 250 U.S. 321, 328 (1919); *City of New Albany v. Burke*, 78 U.S. (11 Wall.) 96, 107 (1871); *Studiengesellschaft Kohle*, 616 F.2d at 1326; *Potash Co. of America v. International Minerals & Chemical Corp.*, 213 F.2d 153, 155 (10th Cir. 1954).

1. Kansas Knew or Should Have Known of the Facts Giving Rise to Its Claim by 1956

The first question in the laches analysis is whether Kansas was diligent in asserting its rights from the time it knew or, in the exercise of reasonable diligence, should have known of its claim. *Aukerman*, 960 F.2d at 1032; *White v. Daniel*, 909 F.2d at 102. The Master found that "[t]he extent of postcompact well pumping in Colorado was not generally known until approximately 1968, and there is no substantial evidence that Kansas knew or should have known about the extent or effect of such well development before that time." Report at 169. Colorado takes exception to this finding.

The record in this case establishes that evidence of increased post-compact well development and pumping in Colorado was available long before 1968. The precise extent of such well development and pumping may not have been known prior to 1968, but the fact that the number of wells and the amount of pumping had increased substantially was public knowledge by 1956.

A January 1956 report prepared by the United States Geological Survey ("USGS") on ground water and the status of investigations in Colorado stated:

> Ground water has long been used in Colorado for domestic, industrial, and municipal supplies but until recently it was used only on a minor scale for irrigation. With the development of efficient pumps, engines, and motors and the availability of cheaper electricity and petroleum products for fuel, *the pumping of ground water for irrigation has grown by leaps and bounds since the early 1930's and is continuing to grow at an ever-accelerated pace. Data accumulated to date indicate that the number of irrigation wells in Colorado increased by about 150 percent between 1940 and 1953.* . . .

Colo. Exh. 95 at 4-5 (emphasis added).

With specific reference to ground water in the Arkansas River Basin, the January 1956 report stated:

> The alluvium and terrace deposits of the Arkansas Valley and its principal tributaries constitute an important aquifer in Colorado, but few data concerning the extent of development are available. On the basis of an inventory of irrigation wells made in the main stem of the valley in 1942 and of later detailed studies in

> some of the tributary valleys, *it is estimated that there are now 1,000 irrigation wells which discharge about 165,000 acre-feet of water annually for the irrigation (largely supplemental) of more than 100,000 acres of land.*

Colo. Exh. 95 at 7-8 (emphasis added). Duane D. Helton, one of Colorado's principal experts, Report at 145 note 57, relied on this report to show that development of wells in Colorado was common knowledge in 1956. RT Vol. 115 at 96-97.[32]

In December 1956, the Arkansas River Compact Administration "held considerable discussion concerning the activity of well drilling and its effect on conditions." Minutes of the Arkansas River Compact Administration

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[32] The January 1956 report was one of a series of reports published by the Colorado Water Conservation Board for use by the public and federal and state agencies as part of cooperative investigations with the USGS. Colo. Exh. 95 at 1; RT Vol. 81 at 87-91 (Helton) (describing history of cooperative studies with the USGS). The Colorado Water Conservation Board is a Colorado state agency with the duty to promote the conservation of the waters of the State of Colorado. Colo.Rev.Stat. §37-60-101, *et seq.* The director of the Colorado Water Conservation Board is one of the three Colorado representatives to the Compact Administration. Arkansas River Compact, Art. VIII-C. The USGS conducts investigations and measurement of water resources throughout the nation, often in cooperation with state agencies. Colo. Exh. 95 at 1-3, 17. *See* Arkansas River Compact, Art. VIII-G(2) (the director of the USGS is requested to collaborate with the Compact Administration and state officials in the systematic determination and correlation of data). Prior to the cooperative investigations in Colorado, the USGS had done investigations of ground water resources in Hamilton, Kearny, and Finney Counties in Kansas, which were published by the State Geological Survey of Kansas. Kan. Exhs. 447 and 448.

Annual Meeting (Dec. 11, 1956) at 15 (Jt. Exh. 19). Other reports published before 1968 also noted the conversion to more efficient pumps and substantially increased post-compact well pumping in the Arkansas River Valley in Colorado. Jt. Exh. 61 at 3 ("With the advent of better well-drilling methods, efficient pumps and the availability of electrical power, the development of ground-water [in the Arkansas River Valley] to supplement surface-water supplies increased rapidly, particularly in the drouth period of the early 1950's.") (published April, 1963); Jt. Exh. 136 at 37, 39-40 (USGS Water-Supply Paper on ground water resources of Prowers County, Colorado, published 1965); Jt. Exh. 137 at 45-46 (USGS Water-Supply Paper on ground water resources of Crowley County, Colorado, published 1965).

Moreover, officials in Kansas were aware of well development in Colorado before 1968. Colorado offered the deposition of Howard C. Corrigan, the former Kansas Water Commissioner of the Garden City Field Office who was employed by the Kansas Division of Water Resources for almost 40 years.[33] Colo. Exh. 21. Mr. Corrigan was asked in his deposition:

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[33] Mr. Corrigan was employed by the Kansas Division of Water Resources from 1947 to 1987. Colo. Exh. 21 at 5-8. He was assigned to the Garden City office in 1947 and was the only representative of the Kansas Division of Water Resources in Garden City until 1949. *Id.* at 6. He was the assistant water commissioner in Garden City from 1949 to 1963, and water commissioner of the Garden City field office from 1963 until his retirement in 1987. *Id.* at 6-7. As water commissioner, he had responsibility for the administration of all water within southwestern Kansas, including operations under the Arkansas River

> Q: When did you become aware of well development in the State of Colorado?
>
> A: Oh, shoot, back in the '50's.

Colo. Exh. 21 at 121. He was also asked:

> Q: . . . Did you ever discuss well development in Colorado with any of the Colorado officials?
>
> A: Oh, yes, that was discussed many times. . . .
>
> * * *
>
> Q: Did you discuss it in terms of the affect [sic] of well development on stream flows?
>
> A: That has been discussed, yes.
>
> Q: Do you recall when those discussions occurred?
>
> A: I can't give you dates, no.

Colo. Exh. 21 at 122. In response to an interrogatory by Colorado, Mr. Corrigan had been listed by Kansas as a person with knowledge of unregulated development of post-compact alluvial wells in Colorado. The following question and answer occurred during the deposition:

> Q. At the conclusion of Mr. Robbins' direct examination, . . . you were asked about an interrogatory question that Colorado had propounded to Kansas and you were asked, you

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Compact. *Id.* at 8-10. Kansas had planned to call him as a witness, RT Vol. 34 at 131; but he was hospitalized and was not called to testify. RT Vol. 39 at 6. Colorado then offered his deposition, which was admitted into evidence by the Master in a written order. Order Admitting Exhibits (Dec. 16, 1991).

were listed as one who had knowledge of the first factor which is the unregulated development of post-Compact alluvial wells as contributing to material depletions at the state line. And I understood you to say that you had no knowledge of any facts in that regard. . . . Would you care to clarify your testimony on that point?

A. Well, emphasizing the facts that I would have would be the various times of inspecting and going up into Colorado. I visually inspected the various development of wells and the wells that were drilled along the Arkansas River Basin which indirectly took water out of the river increasing the transit loss. . . . [E]ach and every year since the establishment of the Compact I have computed the transit losses. And a lot of it, I think, was due to a lot of this development of wells in the – along the Arkansas River Basin in the alluvial [sic].

Colo. Exh. 21 at 165-66. Colorado's counsel then followed up on this answer with the following questions:

Q. And with regard to the post-Compact well development that you inspected a number of times in Colorado, when did that occur?

A. That occurred all during the period of time from the '50's right on up to the – '87. I was up there at various times and there has been wells that have been developed just as I stated. . . .

Q. And you inspected those periodically all through the '50's, '60's and '70's?

A. It was noted during those periods of times, yes, at different times, and those wells were pumping.

Colo. Exh. 21 at 167.

The Master acknowledged that the depositions of Kansas' officials offered by Colorado showed that these men were aware of some well development in Colorado before 1968, and that some informal discussions had occurred within the Compact Administration. Report at 164.[34] However, he states that the evidence is "sketchy" and "does not demonstrate that these officials were aware of the number of wells, the extent of Colorado's pumping, or the impact or even potential impact of pumping on usable Stateline flows." *Id.*

The Master misconceives the issue. The issue is not whether these men had actual knowledge of the number of wells in Colorado, the precise extent of pumping in Colorado, or the impact or potential impact of pumping on usable Stateline flows. The issue is whether Kansas knew or, in the exercise of reasonable diligence, should have known of facts giving rise to its claim before 1968. *Aukerman*, 960 F.2d at 1032; *White v. Daniel*, 909 F.2d at

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[34] In fact, formal discussion of well drilling and its effect on conditions did occur at the annual meeting of the Compact Administration in 1956. Minutes of Arkansas River Compact Administration Annual Meeting (Dec. 11, 1965) at 15 (Jt. Exh. 19). Colorado also offered the deposition of Carl Bentrup, a farmer from Deerfield, Kansas, who was a Kansas representative to the Compact Administration from 1957 to 1988. Colo. Exh. 17 at 5-6, 34. Mr. Bentrup did not have knowledge of well development in Colorado in the 1950s, but testified that he remembered wells being drilled in Colorado in the 1960s. *Id.* at 46-47. He testified: "On tours you gradually noticed more wells." *Id.* at 47. "And," he said, "we were beginning to get quite concerned about wells in Colorado and I naturally was looking for them, noticing them on what tours we were taking." *Id.* Mr. Bentrup's deposition was admitted into evidence by the Master. Order Admitting Exhibits (Dec. 16, 1991).

102. Colorado offered the deposition of Mr. Corrigan to show that at least one key Kansas official knew about well development in Colorado in the 1950s, had made inspections in Colorado from the 1950s right up to 1987, had made computations of transit losses each year since the Compact was adopted, and believed that wells indirectly took water from the river increasing the transit losses and that a lot of the transit losses were due to wells.

Colorado's evidence was uncontroverted. Kansas did not call *any* witnesses to testify that Kansas was not aware of increased post-compact well development and pumping in Colorado in the 1950s or early 1960s or its potential impact on Stateline flows. In fact, Edward DeKeyser, a witness called by Kansas who was the superintendent of the Amazon Ditch in Kansas from 1939 to 1981, RT Vol. 33 at 65-67, testified that in 1956 his ditch company board became very concerned about the decline in Stateline flows and instructed him to go to Colorado to investigate, and that he made an investigation of well development in Colorado in 1956 from property tax records. *Id.* at 82-84.

Furthermore, Stateline flows declined substantially from 1952-56 and again in the early 1960s. Report at 142-43. While these declines may have been due in large part to drought and implementation of the Compact, the declines were sufficient to call for inquiry and investigation by Kansas, and in fact did result in an investigation by Mr. DeKeyser at the direction of his ditch company board in 1956. Moreover, there was "considerable discussion concerning the activity of well drilling and its effect

on conditions" by the Compact Administration at its annual meeting in December 1956. Minutes of the Arkansas River Compact Administration Annual Meeting (Dec. 11, 1956) at 15 (Jt. Exh. 19).

Laches will not be imputed to one who has been justifiably ignorant of facts which create his right or cause of action. *Studiengesellschaft Kohle*, 616 F.2d at 1326; *Potash*, 213 F.2d at 155. But ignorance will not of itself excuse delay. *Id.* "The party must be diligent and make such inquiry and investigation as the circumstances reasonably suggest, and the means of knowledge are generally equivalent to actual knowledge." *Potash*, 213 F.2d at 155; *Benedict v. New York*, 250 U.S. at 328; *see also City of New Albany v. Burke*, 78 U.S. (11 Wall.) at 107 (possession of the means of knowledge of fraud is in equity tantamount to knowledge itself).

Applying these principles to this case, it is clear that whether or not Kansas actually knew of the number of wells, the precise extent of pumping in Colorado, or the impact or potential impact of post-compact well pumping in Colorado on usable Stateline flows prior to 1968, it had sufficient knowledge, or the means of knowledge, to call for an inquiry and an investigation of post-compact well pumping in Colorado by 1956. The report published in January 1956, the declines in Stateline flows from 1952-56, the inspections made by Mr. Corrigan, the investigation undertaken by Mr. DeKeyser in 1956, and the discussion at the Compact Administration's annual meeting in 1956 demonstrate that sufficient information was available to Kansas to call for an inquiry and an investigation of post-compact well pumping at that time. Further, Colorado and the USGS continued to publish information about

well development in the Arkansas River Valley in Colorado from 1956 to 1968. Jt. Exhs. 61, 67-69, 136, 137. Several of these reports noted the conversion to more efficient pumps and increased well development and pumping in Colorado. Jt. Exh. 61 at 3; Jt. Exh. 136 at 37, 39; Jt. Exh. 137 at 45.

The Master states, however, that none of the reports relating to well pumping in Colorado deals with the issue of impact on *usable* Stateline flow. Report at 161. Once again, this is not the relevant inquiry. The issue is whether Kansas had sufficient information to investigate and determine if a Compact violation existed. *Potash*, 213 F.2d at 155; *Pearson v. Central Ill. Light Co.*, 210 F.2d 352, 356-57 (7th Cir. 1954); *Naxon Telesign Corp. v. Bunker Ramo Corp.*, 517 F. Supp. 804, 808 n. 3 (N.D.Ill. 1981), *aff'd, in part*, 686 F.2d 1258 (1982) ("Even if Naxon had been 'unsure' of the infringement, it had a duty to promptly investigate and determine if infringement existed.").

The *potential* impact of an increase in well pumping in Colorado was known by officials in Kansas prior to the Compact. Kan. Exh. 205A at 1-2 (letter dated July 13, 1940, from George S. Knapp to W.E. Stanley describing how Colorado could increase consumption without increasing irrigated acreage by increasing well pumping); *see also* Kan. Exh. 448 at 39-69, 78-80 (1943 report prepared by the USGS on ground water resources of Hamilton and Kearny Counties, Kansas, discussing principles governing the occurrence and movement of ground water and the effect of pumping on water levels and stream flow).[35]

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[35] Moreover, Colorado was prejudiced in proving that Kansas had actual knowledge of increases in post-compact well

Thus, by 1956, Kansas had sufficient information about increased well pumping in Colorado and its potential impact on usable Stateline flows to call for an investigation to determine if a Compact violation existed. Yet Kansas did nothing until 1983 when it hired Simons, Li to make an investigation of declining Stateline flows, and made no request for an investigation by the Compact Administration until 1985. Kansas delayed 29 years (1956-1985) in making a request for an investigation by the Compact Administration after it knew or, in the exercise of reasonable diligence, should have known of facts giving rise to its claim, a delay longer than its 21-year delay in *Colorado v. Kansas*, 320 U.S. at 394.

The Master was unwilling to find that Kansas delayed unreasonably in asserting its rights because neither state seemed to be aware that well pumping in Colorado depleted usable Stateline flows. He states:

> Colorado also accuses Kansas of sleeping on its rights, saying that is the issue. . . . This latter argument, however, seems to undercut Colorado's reliance on its own good faith. At least,

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pumping in Colorado by 1956 and the potential impact of such increases on usable Stateline flow because key witnesses from that period, including Robert V. Smrha, William E. Leavitt, and Roland H. Tate, had died. Report at 158-59. Smrha was the Kansas Chief Engineer from 1951 to 1972, the chief state official charged with the administration of water rights in Kansas. *See* Arkansas River Compact, Art. VIII-C. As the Kansas Chief Engineer, Smrha was a Kansas representative to the Compact Administration from 1951 to 1972. *See* Annual Reports of the Arkansas River Compact Administration for the years 1951 to 1972 (Jt. Exh. 18). Leavitt and Tate were Kansas representatives to the Compact Administration from 1949 to 1957. *Id.*

> Colorado's argument requires that Kansas recognize a potential compact violation while Colorado is excused.

Report at 165.

The Master confuses two distinct issues. Colorado never suggested that there was no evidence of a potential Compact violation. However, several Colorado witnesses testified that, in their opinion, pumping by wells upstream from Colorado ditches reduced diversions by Colorado ditches, not Stateline flows, or that depletions caused by well pumping were offset by transmountain return flows. RT Vol. 66 at 44-47 (Miles); RT Vol. 78 at 61-62, 85-86 (Danielson); RT Vol. 84 at 51-52, Vol. 115 at 62-63 (Helton).[36] Dr. Jeris A. Danielson, the Colorado State Engineer from 1979-1992, testified that his predecessor as State Engineer, C.J. Kuiper, had continued to issue well permits near the Stateline in the 1970s because of his belief that there was still a substantial amount of unused water passing Garden City and because Kansas was allowing wells to be drilled in Kansas. RT Vol. 76 at 112-15. Thus, Colorado argued that its officials believed in good faith that post-compact well pumping did not violate the Compact. *See Aukerman*, 960 F.2d at 1033 (a good-faith belief in the merits of a defense may tilt matters in the defendant's favor). However, the fact that

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[36] The Master agrees that transmountain return flows offset some depletions in Colorado: "The compact does not cover transmountain imports, and Kansas has acknowledged that it makes no claim to such water. However, the return flows from such imports do add to the Arkansas River supply and do act to offset depletions caused by use in Colorado." Report at 257.

Colorado officials believed in good faith that post-compact well pumping did not violate the Compact does not in any way detract from the fact that for 29 years Kansas knew or, in the exercise of reasonable diligence, should have known of facts giving rise to its claim.[37]

2. Kansas Has No Valid Excuse for its Lengthy Delay

Once it is established that Kansas had delayed for a lengthy period of time in making a complaint about post-compact well pumping in Colorado, the inquiry shifts to whether Kansas had a justifiable excuse for its delay. Although there was no specific evidence to explain why Kansas did not complain sooner, Report at 170, the Master speculated that:

> . . . Kansas may well have been relying upon the slowly developing regulatory system in Colorado for protection. This program was evolving all through the 1970s, . . . It is true that the implementation of this requirement has proved lacking, but that result could not have been known at the outset.

Id. Having posited that Kansas was relying upon Colorado's efforts to regulate pumping, the Master ruled that Kansas' reliance on Colorado was a justifiable excuse for not making a complaint:

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[37] Moreover, to the extent the Master focused on Colorado's actions rather than Kansas' delay, he distorted the basic concept of laches. *Aukerman*, 960 F.2d at 1031-32. Laches focuses on the dilatory conduct of the plaintiff and the prejudice which the plaintiff's delay has caused. *Id.*

> I think that Kansas had a right to rely, at least initially, upon the Colorado efforts to regulate pumping, and the law should not penalize a state under those circumstances. . . . Moreover, equitable defenses should not be applied in ways to encourage or force early litigation between states, particularly when a state is implementing efforts to address the problem.

Report at 170.

The reasons suggested by the Master are not justifiable excuses for Kansas' lengthy delay in making a complaint. First, there is no evidence in the record that Kansas was relying upon "the slowly developing regulatory system in Colorado for protection" or that Colorado's actions had anything to do with Kansas' decision not to complain. *See Potash*, 213 F.2d at 159. Kansas knew or had reason to know of increased well development and pumping in Colorado by at least 1968 or, if Colorado is correct, much earlier. For at least 16 years after it knew or had reason to know of facts giving rise to its claim, Kansas did not request an investigation by the Compact Administration, it made no complaint to appropriate Colorado officials, and it did not state that it was forebearing from making a complaint in reliance on actions being taken by Colorado. Nothing put Colorado on notice that Kansas was concerned about the possible effects of well pumping or that Colorado was at risk of being sued for a Compact violation.

Second, Colorado was implementing efforts to address the impacts of well pumping on senior surface rights in Colorado, not Stateline flows. Report at 133,

162.[38] If Kansas was relying on Colorado's efforts to address a *Compact* violation, Kansas should have at least informed Colorado of its intent to pursue a claim in the event actions by Colorado were unsuccessful. *Cf. Studiengesellschaft Kohle*, 616 F.2d at 1328. This is not a case where Kansas had complained and Colorado was implementing measures to address the problem. Kansas simply did nothing until 1984, when it furnished Colorado with a copy of the Simons, Li report.

Moreover, Kansas could have investigated a possible Compact violation without bringing litigation. The Arkansas River Compact created an interstate agency which had authority to investigate violations of the Compact, Arkansas River Compact, Art. VIII-A, VIII-H, and Kansas was represented on the Compact Administration by the Kansas Chief Engineer, the chief state official charged with administration of water rights, and by two local water right owners. *Id.*, Art. VIII-C. Further, during the lengthy period that Kansas delayed in making a complaint, it made no effort to have the Compact Administration or the USGS collect or preserve evidence that would be needed to determine its claim, including power records, power coefficients, tributary inflows, and flows at Garden City. *See* Arkansas River Compact, Art. VIII-

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[38] While the Colorado State Engineer believed that well pumping had reduced flows of the Arkansas River in Colorado available to senior Colorado ditches, he also believed that there was a substantial amount of water passing Garden City unused. RT Vol. 76 at 112-15 (Danielson). Thus, the Colorado State Engineer did not adopt regulations to protect Stateline flows. *Id.* at 84-86 (Danielson). *See* Report at 161-62.

G(1), VIII-G(2). Under the circumstances, reliance on Colorado's efforts to regulate pumping for protection is not a justifiable excuse for Kansas' delay.

The Master appeared to be unwilling to find that Kansas' delay was inexcusable because in *Texas v. New Mexico*, 482 U.S. 124 (1987), the Court held that New Mexico could not escape liability for past failures to perform its duties under the Compact based on good-faith differences about the scope of undertakings under the Compact. Report at 165-66. In that case, however, Texas brought its concerns to the attention of the Pecos River Compact Commission in 1957. *Texas v. New Mexico*, 462 U.S. 554, 560-61 (1983). Thereafter, Texas continued to try to resolve its concerns through the Compact Commission until, in 1974, it finally brought suit against New Mexico. *Id.* at 561-62. Moreover, contrary to the Master's belief, Report at 167, New Mexico did raise the defense of laches, which was rejected by Special Master Jean S. Breitenstein:

> Texas had asserted its claims in the administrative forum for many years before bringing this suit. The continued efforts of Texas to have the Commission adopt its position does not preclude it from bringing this action. Otherwise, Supreme Court litigation would replace negotiation. The Master rejects the defense of laches.

Report of Special Master on His Decision and Supplemental Decision Regarding the Affirmative Defenses of New Mexico to the Complaint of Texas, *Texas v. New Mexico*, No. 65, Original (Oct. Term 1975) at 13 (May 6, 1979).

In this case, Kansas had not asserted its claims in the administrative forum for many years before bringing this

suit. *Cf. Gull Airborne Instruments, Inc. v. Weinberger*, 694 F.2d 838, 844 n. 8 (D.C. Cir. 1982) (plaintiff's many attempts to receive administrative relief served to put the government on notice that plaintiff was not sleeping on its rights). Charging Kansas with unreasonable delay in this case would not "encourage or force early litigation between states." Here, Kansas had available a means to investigate a possible violation of the Compact through an investigation by the Compact Administration. Arkansas River Compact, Art. VIII-H. The Compact also provides that the Compact Administration may refer matters for arbitration. *Id.*, Art. VIII-D. Thus, Kansas had means available, short of litigation, to make a complaint, but failed to make use of those means. Although equitable defenses should not be applied to encourage or force early litigation between states, it is sound public policy to encourage a state to give early notice of and an opportunity to remedy possible compact violations to a sister state, rather than sitting back silently while damages accrue.

The Master also suggested that Kansas' delay should be excused, at least for some period of time, because determining what flows are usable, and depletions to usable Stateline flows, in contrast to depletions to the total Stateline flows, is not simple. Report at 161, 162-63. While Kansas may have been entitled to a reasonable period of time to conduct an investigation into the basis for its claim, that excuse does not justify Kansas' lengthy delay in this case. For example, the 1983-84 investigation conducted by Simons, Li & Associates, Inc., for the State of Kansas was completed in five months. Jt. Exh. 88 at 1.1.

Simons, Li did not hesitate to make a preliminary assessment of what flows were usable or to make a preliminary estimate of depletions to usable flows from post-compact well pumping in Colorado. *Id.* at 5.2 to 5.5. Thus, the difficulty in determining what flows are usable, and depletions to usable Stateline flows, does not justify Kansas' lengthy delay in this case. *See Stone v. Williams*, 873 F.2d at 625 ("But these reasons for delay cannot last forever for the purposes of laches. A point arrives when a plaintiff must either assert her rights or lose them.").

3. Colorado Was Prejudiced by Kansas' Unexcused Delay

The final inquiry in the laches analysis is whether Colorado was prejudiced by Kansas' delay. Courts have recognized a variety of factors which constitute prejudice to the defendant from the plaintiff's delay.[39]

Evidentiary or "defense" prejudice may arise due to the loss of evidence, the death of witnesses, or the fading memories of other witnesses, thereby undermining the court's ability to determine the facts. *Brown v. County of Buena Vista*, 95 U.S. at 161; *Aukerman*, 960 F.2d at 1033; *Stone v. Williams*, 873 F.2d at 625-26; *Studiengesellschaft*

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[39] Federal Courts have generally applied a sliding scale on the issue of prejudice. *E.g., White v. Daniel*, 909 F.2d at 102; *Goodman v. McDonnell Douglas Corp.*, 606 F.2d at 807. The shorter the delay, the greater the prejudice the defendant must show and vice versa. *Id.* Obviously, the longer the delay, the greater the likelihood that witnesses have died, memories have faded, and evidence has been lost or obscured, which is certainly true in this case.

Kohle, 616 F.2d at 1326-27; *Goodman v. McDonnell Douglas Corp.*, 606 F.2d at 808 n. 17. *See Indiana v. Kentucky*, 136 U.S. 479, 511 (1890), *quoting Rhode Island v. Massachusetts*, 45 U.S. (4 How.) 591, 639 (1846).

Economic prejudice may arise where the defendant will suffer the loss of monetary investments or incur damages which likely would have been prevented by earlier suit. *Aukerman*, 960 F.2d at 1033. In other cases prejudice may arise because a defendant has changed its position in a manner that would not have occurred but for the plaintiff's delay. *Gull Airborne Instruments, Inc. v. Weinberger*, 694 F.2d at 844.

The Master acknowledged that there were problems with missing data in trying to reconstruct pumping in Colorado. Report at 157, 189, 202. Nevertheless, he concluded that Colorado had not suffered prejudice by Kansas' delay because data from the pre-compact or early post-compact years "was simply not being collected at that time." *Id.* at 157. He states: "The lack of data suggests that neither state could be expected to have been aware of the effect of pumping." *Id.* Further, he found that the comprehensive evaluation of the hydrology of the Arkansas River Valley in Colorado by the USGS in 1963-68 "used and collected all the data then reasonably available." *Id.* at 158. He states: "If Colorado has suffered any prejudice because of data missing prior to 1963, it is not because Kansas failed to complain about pumping, but simply because the data were not kept." *Id.* Colorado takes exception to these findings.

a. Evidentiary Prejudice

First, Colorado established that electric power records for the period 1940-63 were missing. Colo. Exh. 165*, Table 2.2; RT Vol. 69 at 107-08 (Slattery). The fact that data concerning pumping was not being collected does not mean that electric power records could not have been obtained if Kansas had made a timely complaint. The USGS did collect some power records during the 1963-68 investigation, but there is simply no way to know if the USGS "used and collected all the data then reasonably available" to estimate pumping for the period 1940-63. The electric power records or other data used to make those estimates were not published by the USGS, the data collected during the study to make those estimates was not preserved, and the man who made the USGS estimates for those years, R. Theodore Hurr, had died and was not available to explain the basis on which he had made those estimates. Report at 187; RT Vol. 71 at 51-53 (Slattery); RT Vol. 126 at 58 (Book); RT Vol. 130 at 48-49 (Simpson). In fact, there is no evidence that the USGS pumping estimates for the 1940s were based on power records at all or that the USGS collected any power records for that period. RT Vol. 130 at 49, 51-52 (Simpson).[40]

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[40] To estimate pumping in the CENTEL (Southern Colorado Power Company) service area prior to 1959 and in the Southeast Colorado Power Association (SECPA) service area prior to 1953, Kansas relied upon a tabulation of power company records prepared by the USGS. Colo. Exh. 660 at 4, 9. This tabulation went back to 1948 for the Pueblo Office of the Southern Colorado Power Company and for the Southeast Colorado Power Association; but, it is not clear when the USGS tabulation was

The main focus of the USGS investigation was to inventory wells, map the valley-fill deposits, measure water levels, and read power meters to develop detailed estimates of pumping for the period 1964-68. Jt. Exh. 66 at 4 ("Since 1964, most of the electric and gas meters on irrigation wells have been read during the spring and fall measurements; these readings provide the major source of data to compute ground-water withdrawal."). There is no indication in the 1970 USGS report that the estimates of ground water withdrawals before 1964 were significant for the purposes of that investigation. *See* RT Vol. 130 at 48-49 (Simpson). Nor is there any report on how those estimates were made. RT Vol. 71 at 51-52 (Slattery). Had Kansas complained in a timely manner in 1956, Colorado could have begun the cooperative investigation with the USGS before 1963 and could have attempted to collect missing power data for the years 1940-63. Further, had Kansas complained in 1968, the data used by the USGS to estimate pumping for the years 1940-63 would have been available, and Mr. Hurr would have been available to explain the data and assumptions he had used to make those estimates. Thus, the Master is simply wrong in finding that Colorado did not suffer prejudice because Kansas failed to complain.

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prepared. Colorado used identical power data for these two utilities to make estimates for those years; but, Colorado also obtained power data from Colorado State University, which had collected power data from the Southern Colorado Power Company that went back to 1932 and from the SECPA that went back to 1946. *See infra* note 53. Moreover, both Colorado and Kansas obtained power records from other utilities.

The Master acknowledged that electric power records were missing for the period 1940-60, but suggested that the prejudice to Colorado was not substantial because the missing records could be estimated by regression analyses. Report at 157. That was true to an extent; but, the Master concluded that the regression analyses which Colorado's experts made to estimate missing electric power records for the 1940-45 period were not reliable because they were based on a single set of data for the Pueblo Office of the Southern Colorado Power Company. *Id.* at 189-90. Further, the Master rejected Colorado's estimates for 1946-49, which included power records that were estimated by regression analyses, in part because the power records used to make those estimates were incomplete and might be inaccurate. *Id.* at 188-89, 199-200. Thus, it is totally inconsistent for the Master to say that the prejudice to Colorado from missing electric power records was not substantial when he rejected Colorado's estimates of pumping for the 1940s because there was insufficient data to support them. *Id.* This was not an insignificant issue. In the Report, he states that the amount of the pre-compact pumping allowance was the largest quantitative issue in the case. *Id.* at 182. Thus, Colorado suffered substantial prejudice from Kansas' delay.[41]

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[41] The Master suggests that there is some merit to Kansas' contention that the Colorado experts did not make any serious complaint about the lack of pre-1965 data. Report at 157. In fact, Mr. Slattery testified that the Colorado estimates before 1960 were more uncertain than the estimates after 1960 because of the lack of data. RT Vol. 69 at 93-94. Moreover, while Mr. Helton testified that Mr. Slattery's estimates of pre-compact pumping

In addition to missing electric power records, there was very little information available on pumping by wells powered by non-electric sources, except for the USGS investigation covering the years 1964-68. Report at 211. There is simply no information on what data the USGS collected, if any, to estimate pumping by non-electric powered wells before 1964, and Mr. Hurr had died and was unavailable to explain the assumptions he had made to make his estimates.

The Master also states that it is highly speculative to assume that Colorado would have been able to collect additional data if Kansas had complained sooner. Report at 158. This finding is totally unsupported by the record. First, the USGS investigation during the period 1963-68 was a cooperative investigation with Colorado agencies, Jt. Exh. 66 at 1, which was undertaken without any complaint by Kansas. Had Kansas complained in 1956, that cooperative investigation could have begun earlier. Second, very complete power records were available from 1975 forward, Colo. Exh. 660 at 3-4; RT Vols. 22 at 78-79; 126 at 10-11 (Book), which demonstrates, as one would

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were reasonable, RT Vol. 115 at 58, he also testified that Kansas' estimates of pre-compact pumping were "grossly unfair" to Colorado and not at all representative of what a reasonable level of use would be from those wells. *Id.* The differences between the Colorado and the Kansas pre-compact estimates were almost entirely due to lack of data; and, the Master rejected Colorado's estimates because of lack of data. Thus, while the Colorado experts may not have made a serious complaint about the lack of pre-1965 data per se, they made it clear that the estimates before 1960 were more uncertain and that the uncertainty was due to lack of data.

expect, that power records were much more complete the closer one got to the date of Kansas' complaint.[42]

In addition, had Kansas complained in 1956, farmers or other knowledgeable persons could have been called to testify about non-electric power usage and pumping in the 1940s and 1950s, as Mr. Miles and Mr. Longenbaugh were able to do for the 1970s. Report at 213-14. Likewise, information on conversion from centrifugal pumps and the efficiencies of centrifugal pumps used in the 1940s and 1950s could have been obtained.

Further, there was missing data to estimate pumping after 1968, when the USGS study ended. Specifically, there was only limited data on power conversion coefficients and well-by-well pumping. Report at 215-18; RT Vol. 22 at 50-51 (Book). Had Kansas complained at that time, Colorado could have continued the reading of power meters to estimate pumping and made additional measurements of power coefficients.

The Master rejects this argument and states that he doubts that complaints by Kansas realistically would have made any difference in Colorado's data collection system. Report at 148. He based this conclusion on the fact that "nothing substantial was done" in response to recommendations in the Wheeler Report in 1968 to obtain accurate and continuous discharge records of major tributary inflow and to install meters on wells. *Id.* This statement is inaccurate and unfair. The Purgatoire River and the Apishipa River have been gaged throughout the post-

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[42] Even these records for the most part are not well-by-well power records. RT Vol. 22 at 50-51 (Book).

compact period. Colo. Exhs. 835 and 836. Streamflow gages were established or reestablished on Fountain Creek at Pueblo, the St. Charles River, the Huerfano River, and Big Sandy Creek after 1968. Colo. Exh. 2, Table 2.2.1 at 2-19 (Fountain Creek at Pueblo, 1971-1985); at 2-20 (St. Charles near Vineland, CO, 1968-1974; St. Charles at Vineland, CO, 1978-1985); at 2-21 (Huerfano River near Boone, 1979-85); at 2-25 (Big Sandy Creek near Lamar, 1968-1982). These are the *major* tributaries below Pueblo and streamflow gages were installed on these, as well as other tributaries. *Id.*

Admittedly, the Colorado State Engineer did not order well owners to install meters on wells, but Dr. Danielson and Mr. Simpson explained why they felt that ordering farmers to install meters in wells was not feasible. Report at 113 note 43. While Colorado could have continued the cooperative investigation with the USGS to read power meters, that study was very expensive, RT Vol. 129 at 28 (Major), and there were no complaints by Kansas to justify continuation of that program.

Moreover, missing evidence to estimate pumping was not the only evidentiary prejudice suffered by Colorado from Kansas' delay. Important witnesses who could have established Kansas' knowledge of increased well pumping and post-compact well development in Colorado in 1956 had died, including William E. Leavitt, Roland H. Tate, and Robert V. Smrha. Report at 158-59.[43] The Master states that the testimony of these men would

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[43] Tate died in 1964. Leavitt died in 1967. Smrha died sometime after he retired in 1972. Report at 159.

not have been useful because the records of the Compact Administration are completely devoid of any references to well pumping in Colorado during this time period. *Id.* at 159. In fact, there was "considerable discussion concerning well drilling and its effects on conditions" at the annual meeting of the Compact Administration in December, 1956. Thus, their testimony would have been highly useful to establish their knowledge of post-compact well pumping in Colorado and the reasons Kansas did not make a complaint or request an investigation at that time.

In addition, Colorado established that the streamflow gage at Garden City had been converted to a gage to record flood flows in 1970. Report at 300. The flow at Garden City was needed to do an analysis of flows that had passed Garden City unused. *Id.* at 296. It is unlikely that Colorado would have agreed to the conversion of the Garden City gage had Kansas given any indication that Colorado might be sued for a Compact violation at that time.[44] In addition, had Kansas complained in 1968, it is unlikely that the Colorado State Engineer would have continued to issue well permits after that date. *See* RT Vol. 76 at 109-15 (Danielson).

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[44] The gaging station at Garden City was discontinued by mutual agreement of the States. Twenty-Second Annual Report of the Arkansas River Compact Administration at 7 (1970) (Jt. Exh. 18).

b. Economic Prejudice

With regard to economic prejudice, the Master found that Colorado had not been prejudiced by Kansas' delay because once farmers in Colorado, relying upon Colorado law, had made investments to replace pumps and construct wells, the passage of time would not create prejudice. Report at 157. On the contrary, he concluded that delay by Colorado or Kansas in bringing about well regulation permitted the benefits of those wells to be increasingly enjoyed and such investments amortized. *Id.* This analysis confuses benefits of wells to well owners with prejudice to Colorado.[45] While well owners may have enjoyed benefits from post-compact well pumping, the Special Master recommends that Colorado should now pay damages for depletions to usable Stateline flows since 1950 when Kansas made no complaint about such pumping for 29 years. To the extent well owners in Colorado made substantial investments during that period and damages increased while Kansas delayed in complaining about post-compact well development, Colorado was prejudiced by Kansas' delay. *See Colorado v. Kansas*, 320 U.S. at 394; *Continental Coatings Corp. v. Metco, Inc.*, 464 F.2d 1375, 1378 (7th Cir. 1972).

Thus, Colorado demonstrated that important evidence was missing, that important witnesses had died,

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[45] It also ignores the fact that, as Mr. Miles testified, farmers made changes in their operations to incorporate the use of wells, which would make it difficult to convert back to the use of surface water only. RT Vol. 66 at 44-46. *See* Report at 217 (noting Miles' testimony that many systems changed over to underground pipelines).

that there were actions Colorado could have taken to obtain evidence had Kansas complained earlier, and that Colorado had changed its position because Kansas had not complained. Moreover, well owners in Colorado made substantial investments to replace centrifugal pumps, to construct wells, and to change their methods of operation while Kansas unexcusably delayed in making its claim. Report at 149, 217. This evidence was certainly sufficient to establish prejudice.

In summary, the evidence clearly and convincingly shows that 1) Kansas delayed for a lengthy period of time – at least 16 years, or 29 years if Colorado is correct – in making its well claim; 2) there was no valid excuse for Kansas' delay; and 3) Colorado was prejudiced by Kansas' unexcused delay. Thus, Colorado established the basis for its defense of laches.

4. Laches Should Bar a Claim for Damages until Kansas Made a Request for an Investigation in 1985

Application of laches to Kansas' well claim would not affect the prospective enforceability of the Compact, but Kansas' unreasonable and unexcused delay should bar a claim for damages prior to March 1985, when Kansas asked the Compact Administration to conduct an investigation. *Aukerman*, 960 F.2d at 1031; *A.C. Aukerman v. Miller Formless Co.*, 693 F.2d 687, 699 (7th Cir. 1982); *Univ. of Pittsburgh v. Champion Prod., Inc.*, 686 F.2d 1040, 1044 (3d.Cir.), *cert. denied*, 459 U.S. 1087 (1982). Moreover, application of laches would also eliminate the difficult

problems, largely caused by Kansas' delay, in trying to reconstruct pumping back to 1950.

II. ARTICLE IV-D OF THE ARKANSAS RIVER COMPACT DOES NOT LIMIT PRE-COMPACT WELLS IN COLORADO TO PUMPING 15,000 ACRE-FEET PER YEAR AFTER THE COMPACT BECAME EFFECTIVE

The most significant factual issue in this case was the amount pre-compact wells in Colorado were entitled to pump after the Compact became effective. As the Special Master states:

> Both Kansas and Colorado acknowledge that some wells were in existence during the precompact years, and that pumping of groundwater did occur. Both states also agree that a certain amount of pumping should thus be allowable under the compact. However, the states are in major disagreement over the extent of this allowance. In fact, in terms of potential impact on Stateline flows, the amount of so-called "precompact" pumping is the largest quantitative issue in the case.

Report at 182.

Kansas estimated that ground water pumping in Colorado between Pueblo and the Stateline was 11,000 acre-feet in 1948. Report at 182. Kansas contended that this was the amount of pumping thus "grandfathered" under

the Compact and all that pre-compact wells were allowed to pump in post-compact years. *Id.*[46]

In contrast, Colorado assumed that wells with pre-compact dates of appropriation were entitled to pump the amounts they had pumped under Colorado law, which varied from year-to-year, but averaged 49,275 acre-feet during the period 1950-1985. Report at 183.

The Master rejected both Kansas and Colorado's assumptions about the amount that well owners with pre-compact wells were entitled to pump after the Compact became effective, and instead recommends that pre-compact wells should be limited to pumping the highest amount pumped during the years the Compact was negotiated, which he found to be 15,000 acre-feet per year. Report at 186-88, 200. One reason he rejected Colorado's theory of entitlement was that many well owners in Colorado had replaced centrifugal pumps with more efficient turbine pumps in the early 1950s, which allowed them to pump more water than they had pumped before the Compact became effective. *Id.* at 189. The Master concluded that the increased pumping was "improved or prolonged functioning of existing works" under Article IV-D of the Compact and, therefore, a future beneficial development subject to the limitations of Article IV-D of

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[46] Kansas made no estimates of ground water pumping in Colorado before 1948. RT Vol. 126 at 55-56 (Book). Moreover, Kansas' estimate for 1948 was based on incomplete power records and assumed that pumping by non-electric wells was the same percentage in 1948 as in 1964 when the USGS did an extensive inventory of wells in Colorado. *See infra* notes 48 and 52.

the Compact. *Id.* at 194. Colorado takes exception to this ruling.

A. PRE-COMPACT WELLS ARE NOT LIMITED TO PUMPING THE HIGHEST AMOUNT PUMPED IN THE YEARS DURING WHICH THE COMPACT WAS NEGOTIATED

In interpreting Article IV-D of the Compact, the Master relied on what he believed the Compact negotiators had intended and ignored the subsequent practice of the parties to the Compact.[47] For at least 36 years after the

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[47] The Master generally relied for his interpretation of the Compact on the Kansas historian, Dr. Douglas Littlefield, who prepared a two-volume history of the Arkansas River Compact and testified at length at trial. Report at 71-73. In his report, Dr. Littlefield repeatedly asserted the thesis that the Compact was intended to preserve the status quo in relation to existing diversions in Kansas and Colorado. *E.g.*, Kan. Exh. 129 at 6-8, 263, 296-97, 349-50, 380, 387, 392, 440, 459-60. Colorado objected to portions of Dr. Littlefield's testimony and his report on the grounds that they contained inadmissible legal conclusions about the meaning of the Compact and the intent of the Compact Commissioners, and the Master did grant Colorado's motion to strike portions of the testimony and report. Report at 73; Order (Nov. 13, 1993). However, the Master generally adopted Dr. Littlefield's thesis as his own. Report at 73, 89-90.

Colorado has several objections to Dr. Littlefield and the Master's interpretation of the Compact. First, Dr. Littlefield developed his thesis in large part on the basis of the "broader historical context within which the need for a compact arose." Kan. Exh. 129 at 10-11. Dr. Littlefield's approach reflects the difference between methods used by historians and methods used by Courts to interpret a compact. *See* Kan. Exh. 129 at 11-15. For example, during cross-examination it was brought out that Dr. Littlefield had not relied on anything after the

Compact became effective, Kansas made no objection to the replacement of centrifugal pumps with turbine pumps or increased pumping by pre-compact wells which resulted from improved pumps, drier climatic conditions, or other factors. Not once before this litigation did Kansas suggest that pumping by pre-compact wells in Colorado was limited to the amount pumped during the pre-compact period. Nor did Kansas prevent replacement of centrifugal pumps by turbine pumps or limit pumping by pre-compact wells in Kansas to the amount pumped during the pre-compact period. Jt. Exh. 105 at 40; Report at 226. It is not proper to ignore the subsequent

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Compact was signed, including General Kramer's report to Congress, the hearings held by Congress, or the reports by the Commissioners. RT Vol. 9 at 114-15. Further, he had relied "to a substantial degree" on unedited, uncertified transcripts of the Compact negotiations that were discovered in General Kramer's files rather than the official record of the meetings which the Commissioners had prepared and approved. *Id.* at 115, 120-24, 126-30. *See also* Kan. Exh. 129 at 225, note 274. The Master adopted Dr. Littlefield's approach in interpreting the Compact, Report at 71-90, relying heavily on "the rich history of controversy over the river, and early efforts to apportion its waters between the two states," Report at 71, to derive certain principles which he then used to interpret the Compact. *Id.* at 89-90. He also relied on the unedited, uncertified transcripts of the Compact negotiations (Jt. Exh. 4). *Id.* at 92, 93, 96, 99, 100, 103. The result is that instead of determining the meaning of the Compact from the language of the Compact, the official record prepared by the Commissioners, the report to Congress by General Kramer, the reports by Commissioners, and the subsequent practice of the parties, Dr. Littlefield and the Master tried to divine what they thought the Commissioners had intended from the background leading to the adoption of the Compact.

practice of the parties in interpreting an interstate compact. *See* Restatement (Third) of the Foreign Relations Law of the United States § 325(2) (1987) (subsequent practice is relevant to the interpretation of international agreements); Restatement (Second) of Contract § 202 and comment g (1981) ("The parties to an agreement know best what they meant, and their action under it is often the strongest evidence of their meaning.").

Furthermore, Article VI-A(2) of the Compact provides:

> Except as otherwise provided, nothing in this Compact shall be construed as supplanting the administration by Colorado of the rights of appropriators of waters of the Arkansas River in said State as decreed to said appropriators by the courts of Colorado, nor as interfering with the distribution among said appropriators by Colorado, nor as curtailing the diversion and use for irrigation and other beneficial purposes in Colorado of the waters of the Arkansas River.

The Colorado Commissioners in their report on the Compact stated that Article VI "fully recognizes Colorado's statutory system of water administration, particularly as to use for irrigation and other beneficial purposes in Colorado." Report and Submission by the Commissioners for Colorado of the Arkansas River Compact, *reprinted in Senate Hearing, supra* note 2, at 26 (Article VI) (Jt. Exh. 15); *House Hearing, supra* note 2, at 20 (Article VI) (Jt. Exh. 16). This report was submitted to Congress for consideration in connection with approval of the Compact, *Senate Hearing, supra* note 2, at 21-27 (Jt. Exh. 15); *House Hearing, supra* note 2, at 15-21 (Jt. Exh. 16),

and the Kansas Commissioners did not disagree with the interpretation of Article VI by the Colorado Commissioners. The Master states that Article VI-A(2) must be read in conjunction with Article IV-D and "was not meant to override the obligations of Colorado under Article IV-D." Report at 193-94. However, nothing in Article IV-D states that pre-compact wells in Colorado are limited to pumping the amounts that were pumped during the pre-compact period. This is a limitation which the Master has read into Article IV-D based on his assumption about what the Compact Commissioners intended, an assumption which is not supported by the wording of Article IV-D, the report of the Colorado Commissioners, or the subsequent practice of the parties.

Moreover, the Master's interpretation of the Compact is contrary to the provisions of the Compact when considered as a whole. Article V-H of the Compact provides that "the ditch diversion *rights*" from the Arkansas River in Colorado Water District 67 and in Kansas between the Stateline and Garden City "shall not hereafter be increased beyond the total present *rights* of said ditches" without the Compact Administration making findings that no material depletion of usable flows will result from such increase. Arkansas River Compact, Art. V-H. (emphasis added). The term "rights" is significant in this context. The Compact Commissioners understood that the operation of John Martin Reservoir would change the regime of the river, Jt. Exh. 5 at 2-3, and that diversions by ditches in Water District 67 and in Kansas might increase as the result of implementation of the Compact. *House Hearing, supra* note 2, at 32 (Statement of George S. Knapp) (Jt. Exh. 16). Increases in the *amounts* diverted by

these ditches were not prohibited by the Compact so long as their ditch diversion *rights* were not increased without a finding of no material depletion of usable flows. Thus, it is consistent with Article V-H to permit amounts diverted by pre-compact wells to increase so long as their *rights* are not increased. And, in fact, that was how wells in Colorado were administered without complaint by Kansas for 36 years.

The Master rejected this argument because he concluded, based on Article V-H of the Compact, that: "I cannot believe that the compact was intended to limit increased diversion rights, but to allow new rights to be later established for wells that would change the river allocation between the states." Report at 194. The Master's response is wrong on two counts. First, rights for pre-compact wells in Colorado may have been *decreed* after the Compact became effective, but those rights were *established* by appropriation prior to the date the Compact became effective. *Black v. Taylor*, 128 Colo. 449, 264 P.2d 502, 506-07 (1953); *see Colorado v. New Mexico*, 459 U.S. 176, 179 n. 4 (1982) (describing the prior appropriation doctrine). Ditch diversion rights in Colorado are based on rates of flow in cubic feet per second of time. Because weather conditions vary substantially from year to year in Colorado, diversions are not limited to a specific volume of water, but by the needs of the land for which the right was appropriated. *City of Colorado Springs v. Bender*, 148 Colo. 458, 366 P.2d 552, 555 (1961); RT Vol 84 at 21 (Helton). Therefore, as witnesses for both states testified, the amount of water pumped by wells will vary in any particular year depending on the crops grown, hydrologic conditions, economic factors, and, in the case of

wells used as a supplemental source of supply, the amount of surface water available. RT Vol. 22 at 61, 81-82, 83-84 (Book); RT Vol. 130 at 42-46 (Simpson); RT Vols. 84 at 19-21; 134 at 78-82, 96, 99 (Helton).

The Compact Commissioners clearly understood that ditch diversions in both states, measured in acre-feet, vary from year to year. Jt. Exh. 5 at 2-3, 22. This was permitted so long as the diversion *rights* of the ditches were not increased. Thus, in the case of rights to divert ground water, it is consistent with Article V-H to hold that the Compact did not prevent increased diversions by wells as long as their rights were not increased. And, for many years, the parties acted in accordance with this understanding. The Colorado State Engineer did not limit diversions by pre-compact wells to the volume of ground water pumped during the period when the Compact was negotiated, and Kansas never suggested that pumping by pre-compact wells must be so limited.

The Master disagreed with Colorado about what the Kansas Commissioners who negotiated the Compact understood because he "[did] not believe that any of the commissioners, either from Colorado or Kansas, had in mind the development of the deep turbine pump or the possibility of such a dramatic increase in pumping." Report at 194-95.

Colorado does not dispute that some portion of the increase in pumping by pre-compact wells was due to the replacement of centrifugal pumps with more efficient turbine pumps. However, this occurred in both states without objection. Jt. Exh. 105 at 40; Kan. Exhs. 447 at 112 (all but four of the irrigation wells in Finney and Gray

Counties, Kansas, were equipped with centrifugal pumps); 448 at 92-93 (most irrigation wells in the Arkansas Valley in Hamilton and Kearny Counties, Kansas, were equipped with centrifugal pumps). Given the lack of data to estimate pumping in the 1940s, Report at 199, and the fact that Kansas did not complain at the time about such a conversion or increases in pumping, Colorado believes that owners of pre-compact wells should be permitted to pump in accordance with Colorado law, in amounts which vary from year to year depending on hydrologic conditions and other factors, as they had for the 36 years before Kansas filed this lawsuit. Moreover, not only is this interpretation of the Compact supported by the long-standing conduct of the parties, it is necessary to avoid prejudice to Colorado from Kansas' delay in complaining about well pumping. As will be clear from the discussion of the evidence that follows, Kansas' delay has made it virtually impossible to reconstruct the historical record of pre-compact well pumping.

But, even if the increased pumping due to turbine pumps is "improved or prolonged functioning of existing works" for the purposes of Article IV-D of the Compact, Colorado presented a reasonable method to factor out the increased pumping due to turbine pumps based on the average amounts pumped per well during the 1940s, using estimates made by Colorado's experts. Report at 195-96. The Master rejected Colorado's method on the basis that Article IV-D did not permit *any* increased pumping after the Compact became effective. *Id.* at 194-95. He also rejected the pumping estimates made by Colorado's experts and accepted the pumping estimates made by the USGS as a basis to estimate the pre-compact

pumping allowance. *Id.* at 199-200. Colorado takes exception to this ruling.

B. THE USGS ESTIMATES FOR THE 1940S ARE NOT SUPPORTED BY POWER DATA AND THE MASTER'S REASONS FOR ACCEPTING THOSE ESTIMATES ARE NOT REASONABLE

Colorado made estimates of pumping during the 1940s, which averaged 25,228 acre-feet per year. Report at 185. In 1940, a very dry year, Colorado estimated that ground water pumping in Colorado was 36,837 acre-feet. Colo. Exh. 165*, Table A.1. In 1948, a very wet year, Colorado estimated that ground water pumping was 24,475 acre-feet. *Id.*[48]

The Master rejected the estimates by Colorado's experts for the 1940s on the grounds that "[p]rior to the trial of this case, pumping for 1940-49 had been estimated in five separate hydrologic reports," and "[n]one of these reports, however, estimated amounts that approached the yearly average of 25,228 acre-feet submitted by Colorado for use in the trial." Report at 185. All five reports use

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[48] Both Kansas and Colorado started with the same power records to estimate pumping in Colorado in 1948. There were several reasons for the difference in the Kansas and Colorado pumping estimates for 1948 (11,000 acre-feet vs. 24,475 acre-feet), but the two main reasons are that Colorado estimated missing electrical power records in the Las Animas service area and assumed a higher percentage of pumping by non-electric wells than did Kansas. RT Vol. 133 at 39 (Helton). As Mr. Helton testified, the failure to estimate pumping in the Las Animas service area was not reasonable because there were a significant number of pre-compact wells in that area. *Id.* at 41.

estimates made by the USGS.[49] The USGS estimates were made by Mr. R. Theodore Hurr and have been used in various reports, but the data used by Mr. Hurr to make the estimates for the 1940s were not available, no one was sure how the estimates were reached, and Mr. Hurr died before he could be questioned about the basis on which he made his estimates. Report at 187; RT Vol. 130 at 47-49, 51-52 (Simpson). Although testimony exposed inconsistencies between the USGS pumping estimates and power records, Report at 187; RT Vol. 130 at 47-52 (Simpson), the Master accepted the USGS estimates. We address the Master's reasons for accepting those estimates.

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[49] The estimates in the 1970 USGS report are simply shown in the form of a bar chart. Jt. Exh. 66 at 8, Fig. 3. There are no numerical values given in the report for the 1940-49 ground water withdrawals and there is no explanation of how those estimates were made. The 1985 USGS report and 1986 USDA report simply republished the bar chart from the 1970 Report. Jt. Exh. 129 at 10; Jt. Exh. 108 at I-11. The 1968 Wheeler Report and the 1975 report contain numerical estimates of pumping. Jt. Exh. 92 at 22; Jt. Exh. 94 at 22. The pumping estimates in the 1968 Wheeler Report were obtained from the USGS. Jt. Exh. 91 at 9 (Volume 1 of the Wheeler Report). The 1975 report states that the data for 1940-62 is from the 1970 USGS report. Thus, all five reports use estimates by the USGS, and the estimates in four of the five reports are identical. The fifth report, the Wheeler Report, has slightly different estimates for some years between 1940 and 1965 (*e.g.*, 2,300 acre-feet for 1940 vs. 2,500 acre-feet for 1940 in the 1975 report), but those estimates came from the USGS, Jt. Exh. 91 at 9, and appear to be a preliminary version of the estimates published in the 1970 USGS report.

1. Experts Relied on the 1970 USGS Report

The Master states that experts for both states relied heavily on the 1970 USGS report in which the 15,000 acre-foot estimates appear. Report at 186. This misconstrues the reliance by the experts on the 1970 USGS report.

Experts for both states relied on the power coefficients measured by the USGS during the 1964-68 field investigation and the information on the type of power used for pumping contained in the 1970 USGS report. However, experts for neither state relied on the USGS pumping estimates for the period 1940-63 in the report. RT Vol. 69 at 95-97 (Slattery) (USGS procedure to estimate pumpage prior to 1964 is not documented and is not reasonable); RT Vol. 126 at 30 (Book) (did not form an opinion about the USGS estimates; completed his analysis based on power sold by the power companies for irrigation use). Thus, the fact that experts for both states relied on other portions of the 1970 USGS report is not a reasonable basis to rely on the pumping estimates for the 1940s in that report.

2. Major's Defense of the USGS Estimates

The Master states that Colorado called one of the authors of the 1970 USGS Report as a witness, and he "staunchly defended the accuracy of the USGS's pumping estimates." Report at 186-87. That is not a reasonable basis to accept the USGS pumping estimates. The witness, Mr. Thomas J. Major, was responsible for the inventory of

large-capacity wells from Pueblo to Swink[50] and the collection of data for the report. RT Vol. 129 at 13-14, 17. He was not qualified as an expert on pumping estimates (or otherwise) and had no involvement in making the pumping estimates in the USGS report, other than to provide information to Mr. Hurr. *Id.* at 19, 28, 56. He did not know how the ground water withdrawals plotted in Figure 3 of the 1970 USGS report were determined. *Id.* at 28. Mr. Major was asked specifically if he had determined the amounts of pumping:

> THE SPECIAL MASTER: DID YOU DETERMINE ANY AMOUNTS OF PUMPING?
>
> THE WITNESS: NO, SIR.
>
> BY MR. DRAPER:
>
> Q: AND YOU DON'T KNOW HOW THOSE DETERMINATIONS WERE MADE?
>
> A: THAT WAS TED HURR'S FUNCTION. MY RESPONSIBILITY WAS PRIMARILY TO GET THE INFORMATION TO HIM.

RT Vol. 129 at 56; *see also* RT Vol. 129 at 61-62, 63.

During cross-examination, Mr. Major was asked if he had any reason to doubt the pumping estimates in the 1970 USGS report. RT Vol. 129 at 61. Mr. Major responded that he did not develop them but had "no reason to believe that anyone would do anything that wouldn't be accurate." *Id.* at 62. The basis, and the only basis, for Mr. Major's defense of the accuracy of the USGS pumping

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[50] Swink, Colorado, is just west of La Junta, Colorado. RT Vol. 129 at 13. Thus, Mr. Major was responsible for the inventory of wells in the upstream reach of the study. *Id.* at 13, 15.

estimates was that those figures were subject to the normal USGS peer review and checking and he had no reason to doubt Mr. Hurr's work. *Id.* That is not a reasonable basis to accept Mr. Major's opinion. *See* Fed.R.Evid. 703. Mr. Major was not qualified as an expert in making pumping estimates, Fed.R.Evid. 702, and wasn't qualified to give an opinion that experts in making pumping estimates would reasonably rely upon pumping estimates made by Mr. Hurr. Moreover, Mr. Major did not know how those estimates had been made and did not know what data had been used by Mr. Hurr. RT Vol. 129 at 63. Thus, it is not reasonable to rely on his opinion as a basis to accept the USGS pumping estimates.

3. Fellhauer

The Master states that the Colorado Supreme Court in *Fellhauer v. People*, 167 Colo. 320, 447 P.2d 986, 991 (1968), stated that in 1940 only 2,000 acre-feet were being pumped from wells in the Arkansas Valley in contrast to the estimate of 36,837 acre-feet calculated by Colorado for this trial. Report at 187. The Colorado Supreme Court apparently relied on the USGS estimate for its statement. However, the amount of pumping in 1940 was not a fact which was necessary to the Court's determination in that case, and uncritical use of that estimate does not establish that it is reasonable.

4. 1975 Report

The Master states that Colorado also used the USGS data in its 1975 report prepared for the proceeding before

the water court and introduced into evidence. Report at 187. The Colorado State Engineer's Office did use the USGS pumping estimates for 1940-62 in its 1975 report, Jt. Exh. 94 at 22, Table 7, but also included electric power data in the report. *Id.* Dr. Danielson, who supervised the collection of data for the 1975 report, RT Vol. 76 at 87-88, testified that the USGS pumping estimates for the 1940s appeared to be suspicious based on the electric power data in the 1975 report, RT Vol. 77 at 9-10, and did not appear to be reasonable. RT Vol. 78 at 83-84, 118. Dr. Danielson also testified that the State Engineer's Office was under considerable time pressure to complete the 1975 Report for use at trial and generally used whatever data was available without further analysis. RT Vol. 76 at 94-96. Thus, the mere fact that the USGS pumping estimates were used in the 1975 report does not establish that those estimates are reasonable. *See* RT Vol. 78 at 86, 118.

5. Book's Testimony

The Master states that from the Kansas viewpoint, its expert testified that while he thought the 15,000 acre-foot figure estimated by the USGS for 1948 was high, it was nonetheless reasonable. Report at 187.[51] However, the Kansas expert, Mr. Book, assumed that the percentage pumped by non-electric powered wells in Colorado did not increase prior to 1964, even though 1940 census data (Colo. Exh. 115 at 209) and a Bureau of Reclamation study in 1943 and 1944 on a portion of the Bessemer Terrace

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[51] In contrast, Colorado estimated that pumping in 1948 was 24,475 acre-feet. Colo. Exh. 165*, Table A.1.

(Colo. Exh. 114) showed a much higher percentage of wells powered by non-electric sources. RT Vol. 126 at 43-44, 51-55 (Book); Colo. Exh. 165*, Table 7.1.[52] He also made no attempt to estimate missing power records in the Las Animas, Lamar, and Holly service areas when he estimated pumping for 1948. RT Vol. 24 at 7; *see* RT Vol. 69 at 110-12 (Slattery) (Kansas did not estimate missing data for the Las Animas service area which is not reasonable.); Kan. Exh. 689 at 4 (memo prepared by Mr. Book stating that Colorado's estimates for the Lamar and Las Animas Power Company service areas were an additional significant reason for differences in the estimates in early years). Thus, the difference between the Kansas and Colorado estimates of pumping in 1948 (11,000 acre-feet vs. 24,475 acre-feet) results primarily from differences in assumptions about missing data, RT Vol. 126 at 54-57 (Book), data which could have been obtained or estimated with more accuracy if Kansas had complained earlier. Furthermore, Mr. Book did not make estimates for

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[52] For example, in the CENTEL (Southeast Colorado Power Company) service area and the western portion of the SECPA service area, Mr. Book calculated non-electric pumping as three percent of the total pumping, limited to a total of 2,200 acre-feet based on the maximum non-electric pumping estimated by the USGS during the 1964-68 study. RT Vol. 22 at 75 (Book). Mr. Book admitted that he had no information on non-electric pumping in those areas prior to 1964. RT Vol. 23 at 115. Census data in 1940 reported 344 wells in the Arkansas River Valley, of which only 100 were electric wells. Colo. Exh. 165*, Table 7.1. The inventory of wells by the Bureau of Reclamation in 1943 and 1944 on the portion of the Bessemer Terrace, which was in the Southeast Colorado Power Company service area, indicated that 44 wells were powered by gas and 87 were powered by electric pumps. *Id.*

years prior to 1948 and did not rely on the USGS estimates in making the Kansas estimates. RT Vol. 126 at 30.

6. Basis for the Colorado Estimates

The Master states that even though cross-examination of Mr. Book did expose some inconsistencies between the USGS pumping estimates and the power data in Table 7 of the report prepared by the Colorado State Engineer's Office, Report at 187, "the evidence is without dispute that the published power records for this early period were incomplete, and it may well be that it is the power data on Table 7 not the pumping estimates that are inaccurate." *Id.* at 188.

First, there is no way to know if the USGS pumping estimates are accurate because there is no data to support those estimates and the person who made them is dead. Second, no one knew exactly where the power data in Table 7 came from, Report at 187, RT Vol. 126 at 58; but the power data used by Colorado's experts for the period 1940-49 was obtained from Colorado State University (CSU), which had collected the data from the power companies. RT Vol. 69 at 102; Colo. Exh. 88.b.[53] Cross-

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[53] From 1957 to 1974, CSU collected data from utilities throughout the State of Colorado on power sold for irrigation use. RT Vol. 69 at 99-102 (Slattery). It collected some data in the Arkansas River Valley which goes back as far as 1932. Colorado used the data collected by CSU to make pumping estimates for the years 1940-74, when available, supplemented by records of the Public Utilities Commission, when those were available. Colo. Exh. 165*, Table 2.2 (summary of process used to estimate missing power records for basin). Kansas used virtually identical power data for the years 1948-59 based on a tabulation of

examination of Mr. Book also showed that the USGS estimates for the 1940s were inconsistent with the power data collected by CSU. RT Vol. 126 at 64-66. Mr. Hal D. Simpson, the Colorado State Engineer, testified that the USGS estimates for the 1940s were not consistent with the power data obtained by CSU and were not consistent with studies by the Bureau of Reclamation in 1943 and 1944 because they do not reflect any variation due to wet and dry years. RT Vol. 130 at 47-52 (Simpson). Moreover, there was testimony that the 1940s, with the exception of 1940, in general were a wet period and that surface diversions in Colorado were much above average which would have resulted in below average ground water use. RT Vol. 82 at 133 (Helton).

7. Virtually Nothing Is Known about the Power Figures, but the Pumpage Estimates Have Been Accepted

The Master states that virtually nothing is known about the power figures on Table 7 of Jt. Exh. 94, but the USGS pumping estimates have been accepted, published, and used by the State of Colorado, the courts, the U.S. Department of Agriculture, and the USGS as late as 1985. Report at 188. First of all, Colorado's experts used power data collected by CSU from the utilities, not the power figures on Table 7 of Jt. Exh. 94. Second, the USGS pumping estimates may have been accepted, published, and used by others, including the Colorado State Engineer's

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power company records prepared by the USGS, except for years when it used ledger sheets to estimate power sold in the Southeast Colorado Power Association service area. Report at 207.

office, but those estimates are not supported by power data, no one knew how they were made, they are not reasonable, and they were not used by experts for either state to estimate pumping for the period 1950-63.[54]

8. Lack of Discussion of Pumping During the Compact Negotiations

In addition to the foregoing reasons for adopting the 15,000 acre-foot figure, the Master states that "[c]urrent well pumping in Colorado appears simply not to have been a matter of concern to the compact commissioners." Report at 101; *see also* Report at 195 ("Pumping at the time was so insignificant that it did not even enter the discussions."). He states: "Had pumping been of any appreciable magnitude, I cannot believe that such use of water would not have surfaced in the engineering committee report and the compact negotiations." *Id.* at 101.

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[54] The Master also states that, moreover, there was persuasive testimony by one of the authors of the 1970 USGS report as to the accuracy of that USGS publication. Report at 188. As pointed out, Mr. Major was not an expert in making pumping estimates, did not determine the pumping estimates in the USGS report, and did not know how they were made. Given those facts, his testimony is hardly persuasive. Likewise, the fact that the USGS estimates were made much closer to the time period involved and without the pressure of trial advocacy, Report at 200, does not suggest that the USGS estimates are likely to be more accurate than Colorado's estimates when there is no evidence that the USGS collected any power records earlier than 1948 or even used power records to make the estimates for the 1940s. RT Vol. 130 at 49, 51-52 (Simpson).

First; the Compact Commissioners clearly knew that there was well pumping in both states. *E.g.*, Kan. Exh. 205A at 2; Colo. Exh. 623 at 29-30; *Colorado v. Kansas*, 320 U.S. at 399 (describing testimony that farmers in Kansas who could be served by existing ditches had elected to install pumping systems because of lower costs). Moreover, reports published in 1943 and 1944 in Kansas estimated that ground water-withdrawals for irrigation in the Arkansas River Valley in Hamilton, Kearny, and Finney Counties were approximately 50,100 acre-feet in 1939. Kan. Exh. 448 at 97-98 (23,000 acre-feet pumped in Hamilton and Kearny Counties); Kan. Exh. 447 at 118 (27,100 acre-feet pumped in the Arkansas River Valley in Finney County). Thus, the fact that pumping in Colorado was not discussed during the Compact negotiations does not suggest that pumping was insignificant or that Colorado's estimates are unreasonable.

Second, the engineering committee report specifically noted that the diversion records did not include amounts pumped by wells. *Id.* at 3 ("Irrigation supplies derived from pumps in both states are not included in the tabulated diversions."). The engineering committee never completed its studies. Colo. Exh. 57; RT Vol. 13 at 5-10 (Littlefield). Thus, the fact that the engineering committee report does not contain estimates of pumping and the absence of discussion of pumping during the Compact negotiations does not suggest that Colorado's estimates are unreasonable. If anything, the absence of discussion of pumping indicates that the Compact Commissioners assumed that rights of pre-compact well owners would

be administered in accordance with state law. Arkansas River Compact, Art. VI-A(2).[55]

9. Concerns With Colorado's Estimates

As the final reason for adopting the USGS estimates of pumping for the 1940s, the Master states that he has concerns about the higher pumping estimates developed by Colorado for the 1940-49 period. Report at 189. Basically, he concluded that there was considerable uncertainty in the estimates of pumping during the 1940s because of the lack of information and rejected Colorado's estimates because they were inconsistent with the USGS estimates, which had been used and accepted in other reports. Report at 189-90. This penalized Colorado for the fact that data was missing because of Kansas' delay in complaining. Because it was unreasonable to accept the USGS estimates of pumping for the 1940s, estimates for which there was no underlying data, Colorado recommends that the case be remanded to the Master to determine the amount pumped by pre-compact wells based on their Colorado rights or, in the alternative, the amount pumped prior to the Compact.

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[55] The Commissioners for Colorado who negotiated the Compact stated in their report to the Governor and the General Assembly on the proposed Compact that Article VI of the Compact "fully recognizes Colorado's statutory system of water administration, particularly as to use for irrigation and other beneficial purposes in Colorado." *Report and Submission by the Commissioners for Colorado of the Arkansas River Compact, reprinted in Senate Hearing, supra* note 2, at 26 (Article VI) (Jt. Exh. 15).

IV. INCREASES IN STATELINE FLOWS RESULTING FROM THE 1980 OPERATING PLAN WERE NOT "SEPARATELY BARGAINED FOR" AND SHOULD OFFSET DEPLETIONS TO USABLE STATELINE FLOWS

In April 1980, the Arkansas River Compact Administration adopted an Operating Plan for John Martin Reservoir ("1980 Plan"). Report at 47, 173; Jt. Exh. 21, Doc. 11.[56] The 1980 Plan established storage accounts in John Martin for Kansas and ditches in Colorado Water District 67. Report at 47, 173; 1980 Plan, Subsection II D(2) (Report-App. at 111). The Plan guarantees Kansas 40 percent of releases from conservation storage, which go into the Kansas account in John Martin, thereby allowing Kansas to call for releases from John Martin more nearly in accord with crop demands. Report at 47, 173; RT Vol. 84 at 106-07, 109-10 (Helton). Under the Plan, Kansas receives a greater percentage of the releases from conservation storage than it had received in the 1950s and 1960s. Report at 175; RT Vol. 84 at 107 (Helton). Moreover, by allocating a specific percentage of the releases from conservation storage to Kansas, Kansas cannot diminish

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[56] A copy of the 1980 Plan, as slightly modified in 1984, is included in the Report-Appendix at 107-17. Since the 1984 revisions had no effect on the provisions relevant to Colorado's exceptions, we will refer to it. The provisions of the 1980 Plan are described in the Report. Report at 47-48, 173-74. The provisions of the Arkansas River Compact governing the storage and release of water from John Martin Reservoir and the way in which the 1980 Plan modified the historical method of operating the reservoir are more fully described in Order Granting Kansas' Motion to Dismiss Colorado's Well Counterclaim (July 31, 1992). Report at 450-54.

or invade the portion of conservation storage which Colorado ditches are entitled to demand, thereby protecting Kansas from a claim that post-compact well development in Kansas has resulted in additional releases from conservation storage in violation of the Compact. Report at 226-27; Colo. Exh. 300.

The 1980 Plan also authorized three Colorado ditch companies to store "other" water in John Martin. Report at 47, 174; 1980 Plan, Section III (Report-App. at 114-15). This "other" water consists of water which, for the most part, would otherwise be stored in off-channel reservoirs in Colorado. Report at 47-48. As a condition of storing this "other" water in John Martin, the Colorado ditch companies are required to contribute 35 percent of their stored water to a Kansas Transit Loss Account to assist in delivering water released from the Kansas account to the Stateline. *Id.* at 48, 174; 1980 Plan, Subsection III D (Report-App. at 115).

While Kansas has questioned the authority of the Compact Administration to adopt the 1980 Plan, it has accepted the Plan since 1980 and has not exercised its continuing right to terminate the Plan. Report at 48 note 21, 172.[57]

The evidence at trial showed that Kansas received more usable water than it would have received without the 1980 Plan and, in addition, was able to demand

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[57] The 1980 Plan provided that it would continue until March 31, 1981, and year to year thereafter, provided that either Colorado or Kansas could terminate the Plan by giving written notice by a date certain each year. 1980 Plan, Subsection VII A (Report-App. at 116).

releases from John Martin when the water was more beneficial for crop production. RT Vols. 84 at 109-10; 133 at 68-74 (Helton).[58] On the other hand, the three Colorado ditch companies were permitted to store "other" water in John Martin, which is more efficient than off-channel reservoirs in Colorado, and each of the ditches in Water District 67 received its own separate account and could call for water when it was most needed. Report at 176.

The Master concluded that, because the Plan provided benefits to both Kansas and Colorado which were "separately bargained for," the benefits received by Kansas under the Plan should not offset Compact violations. Report at 180-81. Colorado takes exception to this ruling.[59]

The Master rejected Colorado's argument that the increases in usable Stateline flow resulting from the adoption of the 1980 Plan should offset depletions to usable Stateline flows from post-compact well pumping because he concluded that the Plan was intended only to improve the efficiency of the operation of John Martin and nothing in the Plan indicated that it was intended as an offset against compact violations or as a solution to the impact of well pumping in Colorado. Report at 177.

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[58] Based on the results of the Kansas H-1 Model, the net increase in usable Stateline flows resulting from the 1980 Plan was about 23,500 acre-feet, using the Durbin usable flow method with the Larson coefficients. Colo. Exh. 975, Comparison 9. The increase does not fully offset depletions to usable Stateline flows from post-compact well pumping, but it does reduce those depletions.

[59] Colorado does not take exception to the Special Master's ruling that the 1980 Plan is not a complete bar to Kansas' claims.

The Master overlooked the first "whereas" clause in the resolution adopted by the Compact Administration. The first "whereas" clause states that the Compact Administration "recognizes that, because of changes in the regime of the Arkansas River, the present operation of the conservation features of John Martin Reservoir does not result in the most efficient utilization possible of the water under its control; . . . " Report-App. at 107. The resolution does not state that post-compact well pumping in Colorado or Kansas was a cause of changes in the regime of the Arkansas River; but Mr. Corrigan, the Kansas Water Commissioner, and Mr. Bentrup, a Kansas representative to the Compact Administration, both of whom were involved in developing the Plan, Report at 173, testified that they suspected that the transit losses below John Martin were due to well pumping. Colo. Exhs. 21 at 165-66; 17 at 49-55.

The Master acknowledges that there were concerns about transit losses, but states that "the evidence indicates that the problem lay primarily with surface diversions by the Colorado ditches, not with wells." Report at 179. This finding is not supported by the record. Ditches in Water District 67 are entitled to divert water released from John Martin for them. Because of transit losses during the dry years of 1977 and 1978, releases from John Martin for Kansas did not produce an equivalent in Stateline flow. RT Vol. 77 at 100 (Danielson). In 1978, the Colorado water commissioner for Water District 67 issued an order to Colorado ditches below John Martin ordering them not to divert during the first 24 hours of a release from John Martin to assist in satisfying a demand by Kansas by an equivalent in Stateline flow, Report at 180;

Arkansas River Compact, Art. V-E(3), but two ditches refused to comply. Report at 180. Thus, the transit loss problem did not lie with surface diversions. That was simply the way the water commissioner had attempted to address the transit loss problem.[60] Both Mr. Corrigan and Mr. Bentrup testified that they suspected the transit losses were in part due to well pumping, but Mr. Bentrup testified that "[t]he methods of getting the water, we figure, were the responsibility of the State of Colorado. It was their responsibility to get the water to the state line. How they did it was really no concern of ours." Colo. Exh. 17 at 56.

The 1980 Plan was drafted in response to Kansas' complaints about transit losses, the objections by the Colorado ditches to the order issued by the water commissioner in 1978, and Kansas' insistence that it was Colorado's responsibility to get Kansas' water to the Stateline.[61] By allocating 40 percent of releases from conservation storage to the Kansas account, by establishing a Kansas Transit Loss Account with water which had been historically used in Colorado, and by making other changes, the 1980 Plan reduced the transit losses and offset some of the depletions caused by post-compact

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[60] Colorado concluded that the water commissioner had erred in ordering the ditches in Water District 67 not to divert. The appropriate course of action would have been for the Compact Administration to increase the release from John Martin "to meet extraordinary conditions." Arkansas River Compact, Art. V-C.

[61] Colorado does not agree that Colorado, rather than the Compact Administration, has the responsibility to deliver water to the Stateline. RT Vol. 77 at 94-95, 97-99 (Danielson).

well pumping in Colorado. RT Vols. 77 at 101 (Danielson); 133 at 68-74 (Helton). General principles of contract law dictate that the increases in usable Stateline flows resulting from the Plan should offset depletions to usable Stateline flows caused by post-compact well pumping in Colorado.[62]

The goal in awarding damages for breach of contract is generally to put the injured party in as good a position as he would have been in had the contract been performed. Restatement (Second) of Contract §344(a) and comment a, §345(a) (1981). However, the injured party cannot recover damages "for loss that the injured party could have avoided without undue risk, burden, or humiliation." Restatement (Second) of Contract §350(1). Likewise, the injured party is not entitled to recover damages which it in fact avoided.

Where, as here, the Compact Administration adopted a plan for more efficient utilization of water under its control because of changes in the regime of the Arkansas River, without determining the cause of those changes, Kansas should not be entitled to recover damages for depletions to usable Stateline flows which did not occur because of the adoption of the Plan. The Special Master suggests, however, that the additional benefits from the 1980 Plan were "separately bargained for," *i.e.*, that the additional benefits were simply an inducement to get

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[62] Since a compact is a contract, the Court has looked to general principles of contract law. *Texas v. New Mexico*, 482 U.S. at 129 (citing Restatement (Second) of Contracts §33(2) and comment b (1981)).

Kansas to accept the Plan. However, the Compact Administration adopted the plan for more efficient utilization of water under its control because of changes in the regime of the Arkansas River. Report-App. at 107. Had there been no changes in the regime of the river, including post-compact well pumping in Colorado and Kansas, there is no reason to assume that the Compact Administration would have adopted the 1980 Plan or that Colorado would have agreed to the Plan. Under those circumstances, Kansas should not be allowed to recover damages that were avoided by adoption of the 1980 Plan. *See* Restatement (Second) of Contracts §89(c) (A promise modifying a duty under a contract not fully performed on either side is binding to the extent that justice requires enforcement in view of material change of position in reliance on the promise.). Colorado relied upon the 1980 Plan in not making demands for releases from John Martin which it was otherwise entitled to make under the Compact. Therefore, to the extent the Plan increases Stateline flows, those increases should offset depletions to usable Stateline flows caused by post-compact well pumping in Colorado.

V. KANSAS SHOULD BE REQUIRED TO PROVE A BREACH OF THE COMPACT BY CLEAR AND CONVINCING EVIDENCE

The Special Master recognized that Kansas, as the plaintiff, had the burden to prove its case. Report at 65. However, he concluded that Kansas need only meet the "preponderance of the evidence" test applicable to ordinary civil litigation, rather than the higher "clear and convincing evidence" test which has been applied in

other controversies between states, *e.g.*, *Colorado v. Kansas*, 320 U.S. 383, 393 (1943); *Alabama v. Arizona*, 291 U.S. 286, 292 (1934); *North Dakota v. Minnesota*, 263 U.S. 365, 387 (1923); *Washington v. Oregon*, 297 U.S. 517, 524 (1936); *Missouri v. Illinois*, 200 U.S. 496, 521-22 (1906). Report at 69-70. Colorado takes exception to this ruling.

The Master began his analysis by noting that in *Nebraska v. Wyoming*, 507 U.S. at ___, 113 S.Ct. at 1694-95, 123 L.Ed.2d at 329-30, the Court had restated its "long-standing" rule that a state seeking an equitable apportionment of an interstate stream must present clear and convincing proof of some real and substantial injury or damages. Report at 65. However, he stated that *Nebraska v. Wyoming* had involved a new refinement of that rule:

> The opinion states that where a Supreme Court decree has been issued in an interstate river apportionment case, a state instituting a later proceeding to *enforce* the decree need not meet the strict standard of proof applicable in the initial proceeding.

Report at 66 (emphasis in original).

The Master then stated that a resulting question "is whether or not the Arkansas River Compact is analogous to a Supreme Court decree, so that Kansas' suit may be viewed as one to enforce the compact and therefore as a proceeding subject to a less demanding evidentiary test than clear and convincing proof." Report at 66.

After discussing two background matters, the Master concluded that the preponderance of the evidence test should apply because he could see no reason why an interstate compact should have any less standing than a

decree of the Court and because rights and duties set forth in a compact ought not be harder to enforce than a decree of the Court. Report at 69-70. While suggesting that the burden of proof might be different depending on the nature of the provision of the Compact be enforced, he ruled that Kansas need only satisfy the traditional burden of proof in ordinary civil litigation to enforce the rights and duties of Article IV-D of the Compact, *i.e.*, the preponderance of the evidence. *Id.* at 70. Colorado disagrees with the Master's analysis and his conclusion.

A standard of proof "serves to allocate the risk of error between the litigants and to indicate the relative importance attached to the ultimate decision." *Herman & MacLean v. Huddleston*, 459 U.S. 375, 389 (1983), *quoting Addington v. Texas*, 441 U.S. 418, 423 (1979); *accord Colorado v. New Mexico*, 467 U.S. 310, 323-24 (1984). As the Court said in *Addington v. Texas*:

> The function of a standard of proof, as that concept is embodied in the Due Process Clause and in the realm of factfinding, is to "instruct the factfinder concerning the degree of confidence our society thinks he should have in the correctness of factual conclusions for a particular type of adjudication."

441 U.S. at 423, *quoting In re Winship*, 397 U.S. 358, 370 (1970) (Harlan, J., concurring).

In civil cases, "society has a minimal concern with the outcome of such private suits, . . . " and a plaintiff is required to prove facts by a "mere preponderance of the evidence." *Addington v. Texas*, 441 U.S. at 423. By contrast, the "clear and convincing evidence" standard has been

required "where particularly important individual interests or rights are at stake." *Herman & MacLean v. Huddleston*, 459 U.S. at 389.

In *Colorado v. Kansas*, the Court addressed the burden of proof on a complaining state to prove an increased depletion to the water supply:

> The question must be answered in the light of rules of decision appropriate to the quality of the parties and the nature of the suit.
>
> In such disputes as this, the court is conscious of the great and serious caution with which it is necessary to approach the inquiry whether a case is proved. *Not every matter which would warrant resort to equity by one citizen against another would justify our interference with the action of a state, for the burden on the complaining state is much greater than that generally required to be borne by private parties. Before the court will intervene the case must be of serious magnitude and fully and clearly proved.* [Emphasis added.]

320 U.S. at 393-94 (footnote omitted).

Contrary to the Master's contention, Report at 68, the Court has explained the reasons for the higher burden of proof in equitable apportionment cases and in other cases where one state seeks the assistance of the Court to interfere with actions of another state. Such cases involve interests of quasi-sovereign states and frequently involve important questions of public law. *Washington v. Oregon*, 297 U.S. at 529 ("We are to bear in mind steadily that the controversy is between states, and not between private litigants, the burden and quantum of the proof being governed accordingly," *citing North Dakota v. Minnesota*,

263 U.S. 365 [1923]".); *Virginia v. West Virginia*, 234 U.S. 117, 121 (1914) ("As we have pointed out, in acting in this case from first to last the fact that the suit was not an ordinary one concerning a difference between individuals, but was a controversy between states, involving grave questions of public law, determinable by this court under the exceptional grant of power conferred upon it by the Constitution, has been the guide by which every step and every conclusion hitherto expressed has been controlled."); *Missouri v. Illinois*, 200 U.S. at 520-21.

The higher burden on the complaining state is tempered by the liberal rules allowing full development of the facts in controversies between states, *United States v. Texas*, 339 U.S. 707, 715 (1950), rules which are also applied to guard against the possibility of error. As the Court said in *Virginia v. West Virginia*, in allowing West Virginia to file a supplemental answer which would have been denied in a case between ordinary litigants:

> This conclusion, which we think is required by the duty owed to the moving state, also in our opinion operates no injustice to the opposing state, since it but affords an additional opportunity to guard against the possibility of error, and thus reach the result most consonant with the honor and dignity of both parties to the controversy.

234 U.S. at 121.

Thus, the quality of the parties, the importance of a just resolution of controversies between states, and the need to guard against erroneous factual conclusions in such cases are the reasons for the higher burden of proof in cases between states. The Master concluded that the

preponderance of the evidence standard should be applied in this case, however, because he felt that rights and duties set forth in a compact ought not to be harder to enforce than they would be if contained in a decree of the Court. Report at 75. This confuses an action to enforce a judgment with a case in which one state alleges that another state has breached an interstate compact.

This Court has the right to enforce its judgments in controversies between states. *Virginia v. West Virginia*, 246 U.S. 565, 591 (1918); *see Spallone v. United States*, 493 U.S. 265, 276 (1993) (courts have inherent power to enforce compliance with their lawful orders through contempt). A decree in a controversy between states is entered only after the Court has determined that the case is of serious magnitude and fully and clearly proved, and has reached a result which is "most consonant with the honor and dignity of both parties to the controversy." *Virginia v. West Virginia*, 234 U.S. at 121. The Court, having given the states the "amplest opportunity to be heard" and applied the "largest justice" to the disposition of the case, has a substantial interest in seeing its decree complied with. *Id.* Applying a higher burden of proof to a subsequent proceeding to enforce the decree would lessen the force of the Court's decree by making it more difficult to enforce.[63]

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[63] Consider, for example, where a court in a civil case has made a finding which requires a higher burden of proof, *e.g.*, charges of fraud, suits on oral contracts to make a will, suits to establish the terms of a lost will, suits for specific performance of an oral contract, 2 McCormick on Evidence §340 at 443-44 (3rd ed. J. Strong, ed. 1992) (listing classes of cases in which higher burden of proof applies), and has entered a decree determining the rights of the parties. The court doesn't have the same

The Master felt that the same considerations apply in a suit to enforce rights and duties set forth in an interstate compact. This misunderstands an important distinction between a judicial determination of rights in a case between states and a compact.

A judicial decree in a case between states is limited to a determination of rights based on a present, existing controversy. *Massachusetts v. Missouri*, 308 U.S. 1, 15 (1939). It is entered only after the Court has determined that the case is of serious magnitude and fully and clearly proved, and has carefully weighed the evidence and reached a decision which is fair and equitable. *Virginia v. West Virginia*, 234 U.S. at 121.

A compact on the other hand is a method for resolving an interstate matter without a judicial determination of rights. *Hinderlider v. La Plata River & Cherry Creek Ditch Co.*, 304 U.S. 92, 104 (1938). A compact can be more flexible; it can address matters which are not the subject of a present controversy, including, as in this case, future developments. While it may be true that in some cases the rights and duties set forth in a compact could have been determined by a decree of this Court, it is also true that in some cases the rights and duties set forth in a compact could not have been judicially determined at the time the compact was entered and may not have received the same careful crafting as a judicial decree. Thus, different considerations are present in an action to enforce a decree of the Court.

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reason to apply a higher burden of proof to an action to enforce the decree that it did in making the finding in the first instance.

Moreover, the higher burden of proof in a case to enforce a compact is consistent with the rules allowing full development of the facts that were applied in this case.[64] The Court allows full development of the facts in cases between states to guard against the possibility of error. The "clear and convincing" standard of proof should apply for the same reason.

In discussing "background matters," the Master stated the higher standard penalizes downstream states which will invariably be the party which is required to carry the burden, and that such a rule does not appear consistent with the equality of right among states. This is not correct. As the opinions in *Colorado v. New Mexico*, 459 U.S. 176, 187-88 (1982); 467 U.S. 310, 315-17 (1984), make clear, the burden of proof does not invariably fall upon the downstream state in equitable apportionment cases.

Further, the Master's reasoning ignores the fact that the limitations of Article IV-D and V-H in the Arkansas River Compact apply equally to Kansas, the downstream

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[64] Although the Pre-Trial Order had set a cut-off date for identifying exhibits, Report-App. at 73-74, Kansas repeatedly sought leave to offer revised and new exhibits on the grounds that in a case between states, the Court allows full development of the facts. *E.g.*, RT Vol. 9 at 88-89. Further, Kansas sought a lengthy continuance to replace its chief technical expert, and the Special Master granted the continuance in part for the same reason. Report-App. at 91. It is simply not fair to allow a plaintiff state to take advantage of the liberal rules allowing full development of the facts, then apply the preponderance of the evidence standard. If society does not have a significant interest in the outcome of compact enforcement suits between states, there is no reason to apply the liberal rules allowing full development of the facts in such cases.

state. The Colorado Commissioners who negotiated the Arkansas River Compact insisted that the provisions of Article IV-D and V-H apply to Kansas because they were concerned that Kansas would increase its irrigated acreage and place a greater demand on releases from John Martin Reservoir. Record of the Twelfth Meeting of the Colorado-Kansas Arkansas River Compact Commission at 12-13 (Feb. 3, 4, 5, and 6, 1948); Record of the Seventeenth Meeting at 17-33 to 17-36 (Dec. 13 and 14, 1948) (Jt. Exh. 3). Thus, the downstream state is not invariably the complaining party in an equitable apportionment case or an action to enforce a compact apportioning an interstate stream.

Nor is the higher burden of proof in interstate water cases inconsistent with the equality of right among states.[65] The rules of procedure and the higher burden of proof in cases between states reflect the equal level or plane on which all states stand under our constitutional system, and the importance of confidence in factual conclusions before the Court will interfere with the actions of a state.

Finally, even if the preponderance standard would otherwise apply, Kansas' delay in bringing its claims should "gravely add" to the burden it would otherwise bear. *Colorado v. Kansas*, 320 U.S. at 394.

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[65] The equality of right does not imply some sort of mathematical equality. *See Connecticut v. Massachusetts*, 282 U.S. 660, 670-71 (1931).

CONCLUSION

Colorado recommends that its exceptions to the Special Master's Report be granted and that the case be remanded to the Master for further proceedings and completion of the remedy phase consistent with the Court's opinion.

Respectfully submitted,

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